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U.S.A.F. COMMUNICATIONS
ELECTRONICS TERMINOLOGY.



AFM 100-39

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USAF COMMUNICATIONS-ELECTRONICS DOCTRINE

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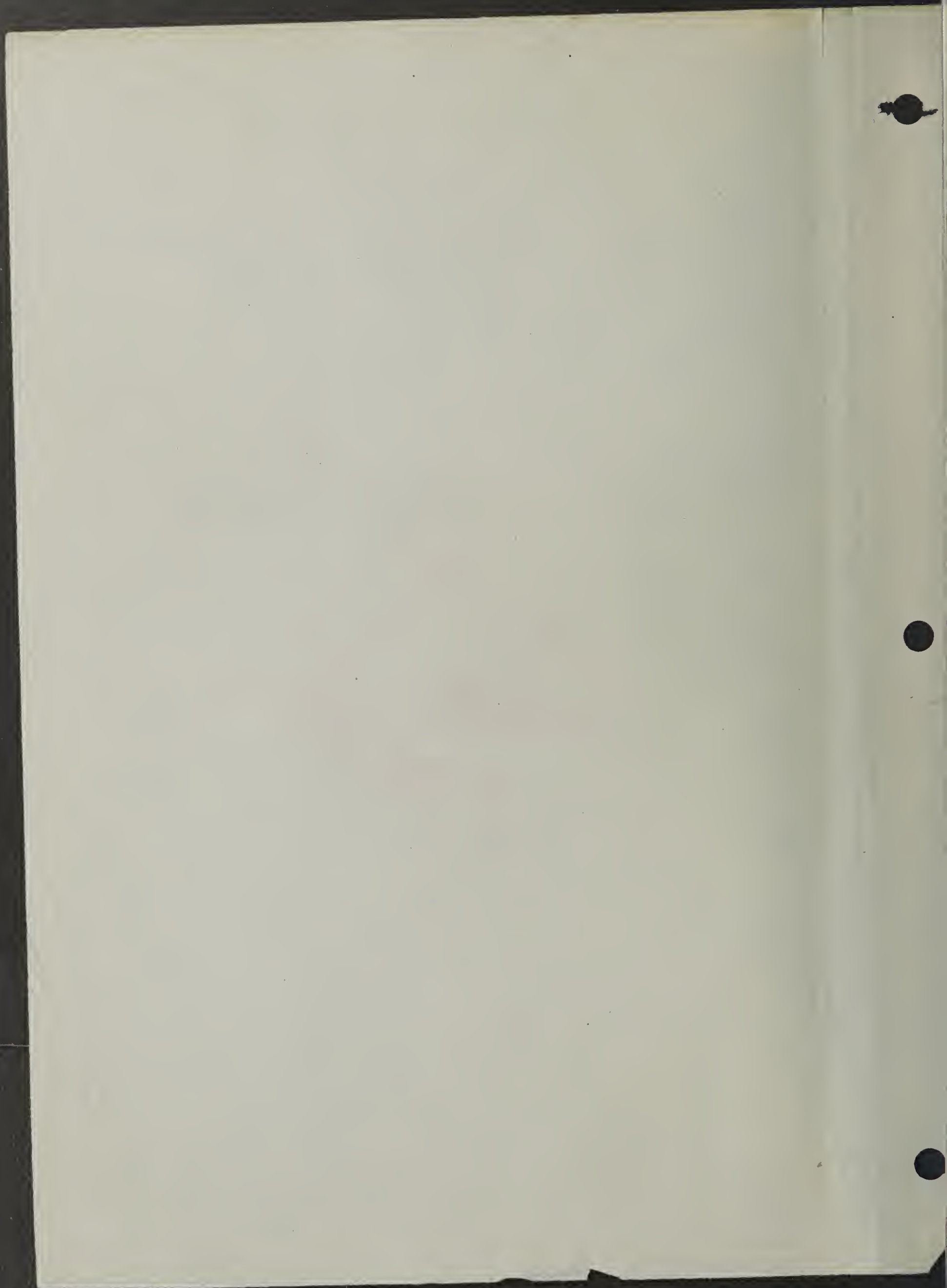
COMMUNICATIONS-ELECTRONICS TERMINOLOGY

1 APRIL 1959



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NO. 100-39

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Engineering

FOREWORD

1. PURPOSE AND SCOPE.—This manual provides a complete cross reference listing of those terms, nicknames, designations, abbreviations, and definitions used in military communications and electronics including the field of astronautics. Additional definitions of words not pertaining to military communications or electronics are given for clarity and support. The information contained in this manual has been prepared primarily for the C-E Staff officer, every effort has been made to define the terms with the utmost accuracy and carefulness. All classified nicknames, abbreviations, terms, and definitions are contained in AFM 100-50, "Classified CED Extracts" under CED 5039.

2. POLICY.—This manual is an integral part of Communications-Electronics Doctrine (CED), as described in AFR 100-13. It is both directive and informative for all USAF activities.

3. CHANGES.—Recommendations for changes in the manual will be submitted directly to: Commander, Air University, ATTN: C-E Doctrinal Project Office, Maxwell Air Force Base, Alabama. Information regarding additional terms, nicknames, designations, abbreviations, and definitions desired by users is solicited.

BY ORDER OF THE SECRETARY OF THE AIR FORCE:

OFFICIAL

J. L. TARR
Colonel, USAF
Director of Administrative Services

THOMAS D. WHITE
Chief of Staff

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HOW TO USE AFM 100-39

1. The terms, nicknames, designations, abbreviations, definitions, and other matter contained in this manual are used in communications and electronics. Special points of interest are as follows:

a. The terms, nicknames, designations, and abbreviations defined, as well as the comments made, relate primarily to Air Force usage. Some words and abbreviations of general interest have been defined, especially when they have been used as key words in the definitions of other words.

b. No attempt has been made to define a term in all its senses, unless all senses have some special interest to Air Force users. Thus, when terms are defined, it is assumed that the reader will understand that these terms may also have other valid meanings not mentioned.

c. Abbreviations, historical and current, authorized and commonly used, are entered in normal alphabetical sequence.

d. Etymologies and pronunciations are not contained in this manual.

2. For purposes of changes, refer to the Foreword for instructions.

A

A (ARMY).

1. Land military forces of a nation.
2. Unit of US Army made up of two or more Army Corps.
3. Short for US Army.

A/D (AIR DEPOT).

Depot providing supply or maintenance for aircraft of Air Force organizations.

A/G (AIR-TO-GROUND).

Pertains to communication from airborne objects to the ground.

a/w (ALL WEATHER).

Usable or serviceable under any condition of weather or visibility.

A+ (A PLUS OR A POSITIVE).

1. Positive terminal of an A-battery or positive polarity of other sources of filament voltage.
2. Denotes the terminal to which the positive side of the filament voltage source should be connected. (Reference: F+.)

A- (A MINUS OR A NEGATIVE).

1. Negative terminal of an A-battery or negative polarity of other sources of filament voltage.
2. On electronic equipment, other than sources of filament voltage, A- denotes the terminal to which the negative side of the filament voltage source should be connected. (Reference: F-.)

A-A (AIR-TO-AIR).

Used or occurring between or among aircraft in the air.

A-AXIS.

One of the three equivalent crystallographic A-axes of quartz, perpendicular to the C-axis (Z direction) and intersecting at angles of 120° . The A-axes are of two-fold symmetry and coincide in position with the Z (or optical) axes.

A-BATTERY.

Source of energy which heats the filaments of a vacuum tube.

A-G GR (AIR-TO-GROUND GUNNERY RANGE).

Area set aside or designated for air-to-ground gunnery practice missions.

A-INDICATOR.

Type of presentation on a cathode-ray indicator in which time is one coordinate (horizontal) and signals appear as deflections in a direction perpendicular to the time scale (vertical). (Reference: A-SCAN.)

A-N RADIO RANGE.

Radio range transmitter that establishes four equisignal zones with off course indication being furnished by the audible Morse code letters A or N, and on-course indication being furnished by a merging of these signals into a continuous tone.

A-N SIGNAL.

Radio-range quadrant-designation signals, which indicate to the pilot whether he is on course, or to the right or left of course.

A-OPERATOR.

Operator assigned to an A-switchboard.

A-POWER SUPPLY.

Source of current used to heat filaments of an electron tube.

A-SCAN.

Presentation on a cathode-ray indicator in which time is one coordinate (horizontal) and signals appear as deflections in a direction perpendicular to the time scale (vertical). (Reference: A-INDICATOR.)

A-SCOPE.

Oscilloscope that uses an A-scan, presenting the range of the target as the distance along a horizontal line from the transmitted pulse pip to the target, or echo pip. Signals appear as vertical excursions of the horizontal line or trace.

A-SUPPLY.

A-battery, transformer filament winding, or other voltage source that supplies power for heating filaments of vacuum tubes.

A-SWITCHBOARD.

Manual telephone switchboard in a local central office, primarily to receive subscriber calls and to complete connections either directly or through some other switching equipment.

AAA (ANTIAIRCRAFT ARTILLERY).

Term applied to ground weapons and materials used to locate, illuminate, fire on, and destroy enemy aircraft.

AAC (ALASKAN AIR COMMAND).

Air Force major air command with the mission of organizing and conducting the air defense of Alaska.

AACS (AIRWAYS AND AIR COMMUNICATIONS SERVICE).

1. Service under the Military Air Transport Service providing point-to-point and ground-to-air communication along airways and air routes.
2. Service under the Military Air Transport Service providing military air traffic control and other communication facilities as may be authorized by the Chief of Staff.

AAD (ANTIAIRCRAFT DIRECTOR).

Army officer, assigned to duty in a direction center, responsible for coordinating antiaircraft action against specified airborne objects.

AADCP (ARMY AIR DEFENSE COMMAND POST).

Army installation used for collection, display, and evaluation of air surveillance information which is used in the assignment of specific batteries against enemy airborne objects.

AAI (AIR-AID-TO-INTERCEPT RADAR).

Airborne radar set used in interceptor aircraft to locate, track, and intercept hostile aircraft.

AAIS (ANTIAIRCRAFT ARTILLERY INTELLIGENCE SERVICE).

System of observers and communication facilities established by antiaircraft artillery units to gather and transmit information of aerial activities necessary for the proper employment of antiaircraft artillery.

AAM (AIR-TO-AIR MISSILE).

AAO (ANTIAIRCRAFT OFFICER).

Army antiaircraft representative, on the battle staff, who advises on employment and capabilities of antiaircraft weapons.

AAOC (ANTIAIRCRAFT ARTILLERY OPERATION CENTER)

Antiaircraft artillery installation established for the control of AAA guns, automatic weapons, etc.

AAOD (ANTIAIRCRAFT ARTILLERY OPERATION DETACHMENT).

AAT (ANTIAIRCRAFT TECHNICIAN).

Army enlisted man who assists the antiaircraft director.

AB (AIR BASE).

Geographical location usually providing space for aircraft operations.

AB-POWER PACK.

1. Assembly in a single unit of the A-battery and B-battery for a battery-operated vacuum-tube circuit.
2. Unit that supplies the necessary A and B dc voltages from an ac source of power.

ABAMPERE.

Centimeter-gram-second electromagnetic unit of current. It is the current which, when flowing through a wire one-centimeter long bent into an arc of one-centimeter radius, produces a magnetic field the intensity of which is one oersted of the center, provided the remainder of the circuit produces no magnetic field at the center of the arc. One abampere is approximately equal to 10 amperes.

ABB (AUTOMATIC BACK BIAS).

Technique which consists of one or more automatic gain control loops to prevent overloading of the receiver by large signals, whether jamming or actual radar echoes.

ABC (AUTOMATIC BASS COMPENSATION).

Circuit used in receivers to make bass notes

sound more natural at low volume settings. The circuit usually consists of a resistor and capacitor and automatically compensates for the poor response of the human ear to weak sounds.

ABCOULOMB.

Centimeter-gram-second electromagnetic unit of electrical quantity. It is the quantity of electricity which passes any section of an electrical circuit in one second when the current is one abampere. One abcoulomb is equal to 10 coulombs.

ABFARAD.

Centimeter-gram-second electromagnetic unit of capacitance. It is the capacitance of a capacitor when a charge of one abcoulomb produces a difference of potential of one abvolt between its plates. One abfarad is equal to 10^{-9} farads.

ABHENRY.

Centimeter-gram-second electromagnetic unit of inductance. It is the inductance in a circuit in which an electromotive force of one abvolt is induced by a current changing at the rate of one abampere per second. One abhenry is equal to 10^{-9} henries.

ABMHO.

Centimeter-gram-second electromagnetic unit of conductance. A conductor, or circuit, has a conductance of one abmho when a difference of potential of one abvolt between its terminals will cause a current of one abampere to flow through the conductor. One abmho is equal to 10^{-9} mho.

ABN (AIRBORNE).

1. Personnel, equipment, etc., transported by air.
2. Material being, or designed to be, transported by aircraft, as distinguished from weapons and equipment installed in and remaining a part of the aircraft.
3. Aircraft, from the instant it becomes entirely sustained by air until it ceases to be so sustained. A lighter-than-air aircraft is not considered to be airborne when it is attached to the

ground, except that moored balloons are airborne whenever sent aloft.

4. Track status indicating that an interceptor is airborne. This status exists until detection and initiation are accomplished.

ABNORMAL PERFORMANCE.

Sampled performance level which deviates markedly and persistently from the standard (or reference) performance level. An unusually high performance level is considered to be as abnormal as an unusually low one, and will be investigated for the cause.

ABNORMAL PROPAGATION.

Phenomena of unstable or changing atmospheric and/or ionospheric conditions acting upon transmitted radio waves, preventing such waves from following their normal path through space, thereby causing difficulties and disruptions of communications.

ABNORMAL REFLECTIONS.

Sharply defined reflections of radio waves from an ionized layer of the ionosphere, occurring at frequencies greater than the critical (penetration) frequency of the layer. (Reference: SPORADIC REFLECTIONS.)

ABOHM.

Centimeter-gram-second electromagnetic unit of resistance. It is the resistance of a conductor when, with an unvarying current of one abampere flowing through it, the potential difference between the ends of the conductor is one abvolt. One abohm is equal to 10^{-9} ohms.

ABORT.

1. To turn back from an aerial mission before completion, for reasons other than enemy action.
2. Switch action taken by weapons directors for interceptor tracks which do not reach airborne status.

ABS (AIR BASE SIMULATOR).

Individual in the direction center training and battle simulation section responsible for simulating an air base operation section.

ABSCISSA.

Horizontal or X-axis in a chart or graph.

ABSENCE-OF-GROUND SEARCHING SELECTOR.

In dial (automatic) telephony, an automatic switch which rotates, or rises vertically and rotates, in search of an ungrounded contact.

ABSOLUTE.

1. Adjective used in conjunction with scientific units such as ampere, coulomb, henry, mho, ohm, volt, joule, and watt.
2. An absolute system of units is one in which numbers of units are chosen as fundamental and all other units are derived from them.

ABSOLUTE ALTIMETER.

Electronic instrument which furnishes altitude data with regard to the surface of the earth or any other object immediately below the instrument, as distinguished from an aneroid altimeter the readings of which depend on air pressure.

ABSOLUTE ALTITUDE.

Altitude with respect to the surface of the earth as differentiated from altitude with respect to sea level.

ABSOLUTE CEILING.

Maximum height above sea level at which a given airplane can maintain horizontal flight.

ABSOLUTE EFFICIENCY.

Ratio of the power output of an electro-acoustic transducer, under specified conditions, to the power output of an ideal electro-acoustic transducer.

ABSOLUTE SYSTEM.

System of units in which numbers of units are chosen as fundamental and all other units are derived from them.

ABSOLUTE TEMPERATURE.

Temperature measured with respect to absolute zero (-273.1°C , -459.8°F or 0°K). (Reference: KELVIN SCALE and ABSOLUTE ZERO.)

ABSOLUTE VALUE.

Numerical value of a number or symbol without reference to its algebraic sign. Thus, $|3|$ is the absolute value of $+3$ or -3 . To signify absolute value, vertical lines are placed on both sides of the number or symbol: $|Z|$.

ABSOLUTE ZERO.

Lowest possible point on the scale of absolute temperature at which all molecular activity stops. Absolute zero is indicated as -273.1°C , -459.8°F , or 0°K . (Reference: ABSOLUTE TEMPERATURE.)

ABSORBER.

Material that absorbs radiated electromagnetic energy.

ABSORPTION.

1. Phenomena connected with the adherence of molecules of a foreign substance to the surface of a solid or liquid.
2. Loss of energy, due to conversion into heat or other forms, in the transmission of waves over radio or wire paths.
3. The term is usually applied, in wire transmission, only to loss of energy in extraneous media.

ATMOSPHERIC. Loss of energy in transmission of radio waves due to dissipation in the atmosphere.

AURORAL. Absorption of radio waves as a result of auroral activity. Auroral activity is caused mainly by particle radiation from the sun.

GROUND. Loss of energy in transmission of radio waves due to dissipation in the ground.

NONDEVIATIVE. Absorption that occurs without any appreciable slowing up of waves. It is the normal sky-wave absorption.

ABSORPTION COEFFICIENT.

Measure of sound-absorbing characteristics of a unit area of a given material as compared to the

sound-absorbing characteristics of an open space (total absorption) of the same area.

ABSORPTION CURRENT.

Current proportional to the rate of accumulation of electric charges within an imperfect isotropic dielectric. The rate of accumulation and hence the absorption current, decreases with time after any change of the potential gradient, and occurs with both an increase and a decrease of potential gradient, so that the absorption current is reversible.

ABSORPTION FREQUENCY METER.

Frequency-measuring device, incorporating a variable circuit, which absorbs a small portion of the radiated energy under measurement. (Reference: WAVEMETER.)

ABSORPTION INDEX.

Functional relationship between the angle of the sun (at any latitude and local time) and the ionospheric absorption.

ABSORPTION LOSS.

That part of the transmission loss due to dissipation or conversion of electrical energy into other forms of energy, either within the medium or attendant upon a reflection.

ABSORPTION MODULATION.

Inefficient and seldom-used method of amplitude modulation of the carrier wave of a radio transmitter. This is accomplished by coupling a microphone circuit, either directly or with vacuum-tube amplifiers, to the antenna circuit of the transmitter. This either absorbs the power radiated by, or varies the radiation resistance of the antenna with the intelligence transmitted.

ABSORPTION SPECTRUM.

Dark lines or gaps in a spectrum which are due to the absorption of certain rays by a gas, a solution, or other absorbing material.

ABSORPTION WAVEMETER.

Instrument used for measuring the wavelength and/or the frequency of a given source by means of a calibrated resonant circuit, loosely coupled to the source, and indicating resonance as a maximum current in the calibrated circuit.

ABVOLT.

1. Centimeter-gram-second electromagnetic unit of electromotive force. With one abampere of current flowing, electric energy is converted to other kinds of energy at the rate of one erg of work per second.

2. Centimeter-gram-second electromagnetic unit of potential difference. It is the potential difference between two points when one erg of work is required to transfer one abcoulomb of positive electricity from the point of lower potential to the point of higher potential. One abvolt is equal to 10^{-8} volts.

AC (ALTERNATING CURRENT).

1. Term applied to electronic equipment indicating it is capable of operation from an ac power source only.

2. Current that is continually changing in magnitude and reversing in polarity.

AC (APPROACH CONTROL TOWER).**AC (AUXILIARY CONSOLE).**

Console containing intervention switches, alarms, and warning lights which an operator uses to perform his duties. The auxiliary console may or may not contain a digital-display tube and telephone equipment.

AC (ALTERNATING CURRENT) GENERATOR.

1. Rotating electrical machine, generally known as an alternator, that converts mechanical power into alternating current.

2. Vacuum-tube oscillator, or any other device, designed for the purpose of producing alternating current.

AC (ALTERNATING CURRENT) PLATE RESISTANCE.

Internal resistance of a tube to the flow of alternating current. It is the ratio of a small change in plate voltage to the resulting change in plate current, with other voltages constant, expressed in ohms.

AC (ALTERNATING CURRENT) RECEIVER.

Radio receiver designed to operate only from an ac source.

AC (ALTERNATING CURRENT) RESISTANCE.

1. Internal resistance to the flow of alternating current between the cathode and plate of a tube. It is equal to a small change in plate voltage divided by the corresponding change in plate current, and is expressed in ohms.
2. Total resistance offered by a device in an ac circuit.

AC&SS (AIR COMMAND AND STAFF SCHOOL).

Member college of the Air University which serves as an educational and doctrinal center in the field of command and staff organization, procedure, and techniques. Includes the Command and Staff School, Squadron Officer School Air Weapons Course, Air Weapons Orientation Course, and Academic Instructor Course.

AC&W (AIRCRAFT CONTROL AND WARNING SYSTEM).

Control and warning system established to control and report the movement of aircraft. It consists of observation facilities (radar and/or visual), control centers and/or filter centers, and the necessary communications.

AC/DC (ALTERNATING CURRENT/DIRECT CURRENT).

Term applied to electronic equipment indicating it is capable of operation from either an ac or dc primary power source.

AC/DC (ALTERNATING CURRENT/DIRECT CURRENT) RECEIVER.

Radio receiver, usually consisting of a few tubes and small power consumption, designed to operate directly from either an ac or dc source.

AC/DC (ALTERNATING CURRENT/DIRECT CURRENT) RINGING.

Method of telephone ringing which utilizes ac and dc components: alternating current to operate a ringer, direct current to aid the action of a relay which stops the ringing when the called party answers.

ACAN (ARMY COMMAND AND ADMINISTRATIVE NETWORK).

Domestic and overseas integrated system of fixed radio, wire, cable, and associated facilities

providing command and administrative communications for the Army. Comparable to the AIRCOM for the Air Force.

ACC (AIR CONTROL CENTER).

Principal air operations installation (land-or-ship-based) from which all aircraft and air warning functions of tactical air operations are controlled.

ACC (AIR COORDINATING COMMITTEE).

National committee established to provide for the fullest development and coordination of aviation policies and activities of federal agencies to formulate the position of US representatives in the international circuit aviation organization.

ACCELERATING ANODE OR ELECTRODE.

1. Used in cathode-ray and other electronic tubes to increase the velocity of the electrons in a beam. It is operated at a high positive potential with respect to the cathode.
2. Electrode used for drawing electrons away from a light-sensitive cathode of a Farnsworth image dissector tube for a television camera.

ACCELERATION MERIT.

Ratio of acceleration (in degrees/-sec²) to angular lag (in degrees) in a servo system.

ACCELERATION VOLTAGE.

Voltage between the cathode and the anode which determines the average velocity of the electrons in the beam. (Reference: BEAM VOLTAGE.)

ACCENTUATION.

1. Amplifying or emphasizing any band of frequencies in the audio spectrum over other audio frequencies.
2. In recording and transmission of FM signals, the pre-emphasis or amplification of the high audio frequencies in the audio amplifier of the recorder or transmitter to improve the signal-to-noise ratio for the higher frequencies.

ACCENTUATOR.

Network, or circuit, used for pre-emphasis or

accentuation of a given band of audio frequencies.

ACCEPTOR CIRCUIT.

Circuit which accepts a given signal; hence a circuit showing minimum impedance to that signal and therefore in series resonance at that frequency.

ACCESS TIME.

Time interval which is characteristic of a storage unit in an electronic computer, and is essentially a measure of the time required to communicate with that unit.

ACCOMMODATION.

Automatic adjustment of the lenses of the human eye for seeing objects at different distances. The process whereby the crystalline lens is adjusted to focus sharp, successive, images of objects located at various distances from the eye.

ACCUMULATOR.

1. Device in an electronic computer which stores a number and which, on receipt of another number, adds it to the number already stored, and stores the sum.

Note. The term is also applied to devices which function as described but which also have other properties.

2. A storage battery (British usage).

ACCURACY.

The quality of freedom from mistake or error in an electronic computer, that is, of conformity to truth or to a rule. Accuracy is distinguished from precision as in the following example: a six-place table is more precise than a four-place table. However, if there are errors in the six-place table, it may be either more or less accurate than the four-place table.

ACERP (ADVANCED COMMUNICATIONS-ELECTRONICS REQUIREMENTS PLAN).

Plan to provide commands with an instrument for soliciting Headquarters, USAF, approval of communications-electronics requirements in advance of the detailed effort required for sub-

mission of the Communications-Electronics Implementation Plan.

ACETATE DISK.

Phonograph record made from an acetate compound.

ACFT (AIRCRAFT).

1. Any machine or craft designed to go through the air.
2. Powered fixed-wing airplane.

ACHROMATIC.

1. Term used in color television meaning a shade of grey from black to white, or color absence.
2. Without color.

ACHROMATIC LENS.

A lens which has been corrected for chromatic aberration. Such a lens is customarily made to bring all light rays to approximately the same point of focus.

ACK (ACKNOWLEDGE).

To communicate with the addressee of a message informing originator of a communication that the message has been received and understood.

ACKNOWLEDGEMENT.

Message from the addressee informing the originator that his communication has been received and is understood.

ACLINIC LINES.

Lines on a magnetic map which connect points of equal magnetic inclination or dip.

ACLS (AUTOMATIC CARRIER LANDING SYSTEM).

Combination radio-radar unit developed for the Navy for use in landing aircraft on carriers under adverse weather conditions. Radar is used to locate the aircraft and determine its position relative to the carrier deck. Altitude, speed, and course are calculated by an electronic computer and fed into a radio transmitter, which directs the aircraft into the flight pattern. If approach is incorrect, the system will automatically wave off the approaching aircraft.

ACORN TUBE.

Button or acorn-shaped vacuum tube, with no base, for UHF applications.

ACOUSTIC ABSORPTIVITY.

Ratio of sound energy absorbed by a surface to that arriving at the surface. It is equal to one minus the reflectivity of the surface.

ACOUSTIC CAPACITANCE.

Volume displacement per dyne per square centimeter of a sound medium. The unit of measurement is dynes per centimeter to the fifth power.

ACOUSTIC CLARIFIER.

System of cones loosely attached to the baffle of a loudspeaker and designed to vibrate and absorb energy during sudden loud sounds to suppress these sounds.

ACOUSTIC COMPLIANCE.

1. Measure of volume displacement of a sound medium when subjected to sound waves.
2. That type of acoustic reactance which corresponds to capacitive reactance in an electrical circuit.

ACOUSTIC FEEDBACK.

Feedback of sound waves from a unit of an audio amplifying system to a preceding part of the system causing, when excessive, a howling sound in the speaker.

ACOUSTIC FILTER.

Sound-absorbing device that selectively suppresses certain audio frequencies.

ACOUSTIC IMPEDANCE.

Total acoustic resistance of a medium to sound waves. Force per unit area on the surface of the medium divided by the flux through that surface. This impedance is expressed in ohms and is equal to the mechanical impedance divided by the surface area. Acoustic impedance contains both acoustic resistance and acoustic reactance.

ACOUSTIC INERTANCE.

Type of acoustic reactance which corresponds to inductive reactance in an electrical circuit. It is the resistance to movement, or reactance of-

fered by the sound medium because of the inertia or effective mass of the medium. It is measured in acoustic ohms.

ACOUSTIC INTRUSION DETECTOR.

Alarm that is responsive to sounds. It generally consists of one or more microphones, concealed or mounted near the object to be protected, connected to audio amplifiers that transmit a warning signal and give an alarm when sounds exceed a predetermined normal level.

ACOUSTIC LABYRINTH.

Special baffle arrangement used with a loudspeaker to prevent cavity resonance and reinforce bass response.

ACOUSTIC LINE.

Equivalent of an electrical transmission line. Baffles, labyrinths, or resonators, are placed at the rear of a loudspeaker, arranged to help reproduce the very low audio frequencies.

ACOUSTIC OHM.

Acoustic resistance, reactance, or impedance which has a magnitude of one acoustic ohm when a sound pressure of one dyne per square centimeter produces a volume velocity of one cubic centimeter per second.

ACOUSTIC PICK-UP.

Pick-up employed in early nonelectrical phonographs.

ACOUSTIC RADIATOR.

That part of an electro-acoustic transducer which initiates the radiation of sound vibrations.

ACOUSTIC REACTANCE.

That part of acoustic impedance which is due to the effective mass of the medium, that is, to the inertia and elasticity of the medium through which the sound travels. It is the imaginary component of acoustic impedance and is expressed in acoustic ohms.

ACOUSTIC REFLECTIVITY.

Ratio of the rate of flow of sound energy reflected from a surface, on the side of incidence, to the rate of flow.

ACOUSTIC REGENERATION.

Feedback of sound waves from a unit of an audio amplifying system to a preceding part of the system causing, when excessive, a howling sound in the speaker.

ACOUSTIC RESISTANCE.

The real component of acoustic impedance. It is responsible for dissipation of energy due to friction between molecules of the air or other medium through which sound travels. It is expressed in acoustic ohms and is analogous to electrical resistance.

ACOUSTIC SHOCK.

Physical pain, dizziness and sometimes nausea caused from hearing a loud, sudden sound.

ACOUSTIC SHOCK REDUCER.

Piece of telephone-protective equipment usually wired across the receiver leads at the jacks in a switchboard. It is essentially a varistor. When subjected to relatively high voltages, it shunts most of the current from the receiver and thus reduces the intensity of acoustical disturbances.

ACOUSTIC STIFFNESS.

In a sound medium, that coefficient which when divided by two times the frequency gives the imaginary part of the acoustic impedance which results from the compliance of the medium, or the volume displacement per unit pressure. The unit of measurement is dynes per centimeter to the fifth power.

ACOUSTIC SYSTEM.

System designed for transmission of sound.

ACOUSTIC TRANSMITTIVITY.

Ratio of the rate of flow of transmitted sound energy to the rate of incident flow.

ACOUSTIC TREATMENT.

Use of sound-absorbing materials to give a room a desired degree of freedom from echo and reverberation.

ACOUSTICS.

1. Science that deals with production, transmission, reception, and effects of sound.
2. Characteristics of a room or location which

control reflections of sound waves and thus control sound reception in various portions of the room or location.

ACP (ALLIED COMMUNICATIONS PUBLICATION).

Agreed communications publication prepared in conjunction with other nations. It is approved for United States joint and allied use by members of the United States Joint Communications-Electronics Committee. ACPs are published to provide communications-electronics instructions and procedures that have allied as well as joint application and may also be authorized by each of the United States services for intraservice use.

ACS (ARMAMENT CONTROL SYSTEM).

System of search and gun-aiming radars which provide the solution to the fire control problem in an aircraft by determining for the pilot the proper course required to intercept a given target. The search radar is used to locate targets at long range. When target is within 4000 yards, the gun-aiming radar is used to track target. Target data is supplied to a computer and solution to firing problem is presented to pilot on an oscilloscope.

ACT. (ACTING).

1. Actively functioning.
2. Doing duty temporarily, or for another.

ACTINIC.

Capable of producing chemical change, as in the photographic action of light.

ACTINIUM.

Radioactive element, atomic number 89.

ACTINIUM SERIES.

One of the principal radioactive series, beginning with actinium.

ACTION ADDRESSEE.

Activity or individual to whom a message is directed, by the originator, for action.

ACTION TIME.

Time required, when used with guided missiles, for a missile to fall from the decision altitude to interception altitude.

ACTIONOMETER.

Instrument for measuring the intensity of radiation received from the sun.

ACTIVATION.

Make active, as to make certain substances radioactive or capable of reacting to radiant energy.

ACTIVE AIR DEFENSE.

Action taken to destroy an enemy air attack.

ACTIVE BALANCE.

Summation of all return currents, in telephone repeater operation, at a terminal network balanced against the impedance of the local circuit or drop.

ACTIVE COMPUTER.

One of two computers at a SAGE center actually performing the air defense mission.

ACTIVE ELECTRIC NETWORK.

Electrical network containing one or more sources of energy.

ACTIVE ELECTRONIC COUNTERMEASURES.

That major division of electronic countermeasures involving actions taken which are of such nature that their employment is detectable by the enemy. Classified definition. (Reference: AFM 100-50.)

ACTIVE JAMMING.

Intentional radiation or reradiation of electromagnetic waves with the object of impairing the use of a specific portion of the electromagnetic wave spectrum.

ACTIVE MATERIAL.

Lead oxides or other active substances in the plates of a storage battery.

ACTIVE OR ACTUAL POWER.

Average of values of instantaneous power taken over one cycle.

ACTIVE TRANSDUCER.

1. Transducer whose output is dependent upon sources of power which are controlled by one or more of the waves concerned.

2. Transducer containing one or more sources of power.

ACTIVITY.

1. General term used to indicate a unit, formation, organization, or establishment.

2. Reference term used to describe the strength or magnitude of oscillation of quartz crystals.

ACTUAL HEIGHT.

Highest altitude at which refraction of radio waves actually occurs.

ACTUATING DEVICE.

Manually or automatically operated switch that initiates signal transmission.

ACW (AIRCRAFT CONTROL AND WARNING).

Activity for detecting, tracking, and reporting airborne objects and for evaluating information received. Its purpose is to furnish air defense warnings and to use air defense weapons to combat an enemy.

ACWO (AIRCRAFT CONTROL AND WARNING OFFICER).

Member of the battle staff responsible for air surveillance, identification, and control.

ACYCLIC MACHINE.

Direct-current machine in which the voltage generated in the active conductors maintains the same direction with respect to those conductors, at all times.

AD (ATTENTION DISPLAY).

Tabular or vector message, computer generated on the display tubes of an operator's console, drawing attention to a particular situation.

ADA (AIR DEFENSE AREA).

1. Specifically defined area within which identification of airborne objects is not required if the flights originated in the area, except during periods of air defense emergency.

2. Specifically defined and established territory that includes objectives of possible enemy air attack and for which air defense must be provided.

ADAPTER.

Fitting which is designed to adapt a jack, plug, or receptacle so as to make possible electrical connection by means other than those originally intended.

HOMING. Device which, when used with an aircraft radio receiver, produces aural and/or visual signals which indicate the direction of a transmitting radio station with respect to the heading of the aircraft.

PANORAMIC. Attachment designed to operate with a search receiver to provide a visual presentation on an oscilloscope screen, of a band of frequencies extending above and below the center frequency to which the search receiver is tuned.

ADC (AIR DEFENSE COMMAND).

Air Force command charged with the execution of North American Air Defense Command policies for Air Force participation in air defense.

ADCC (AIR DEFENSE CONTROL CENTER).

Land based, air-operations installation which with the aid of early-warning installations, air defense direction centers, and other organizations and facilities, provides aircraft control and warning, and control and direction of active air defense in a given air defense sector.

ADCOCK ANTENNA.

Pair of vertical antennas separated by a distance of one-half wavelength or less, and connected in phase opposition to produce a directional pattern having the shape of a figure eight.

ADCOCK DIRECTION FINDER.

Spaced antenna, using vertical antennas, designed to minimize the response due to horizontally polarized components of the waves.

ADCOCK RANGE.

Range using vertical component transmitting antennas for A-N airplane navigation.

ADCOCK SYSTEM.

Radio system utilizing an adcock antenna.

ADDC (AIR DEFENSE DIRECTION CENTER).

Ground control intercept station that controls interceptors, antiaircraft fire, and reports the progress of air defense to the air defense control center.

ADDER.

1. Amplifying stage which combines red, green or blue signal from matrix network with Y luminance signal, and feeds result to a corresponding color output stage; a color television term.

2. Device in an electronic computer which can form the sum of two or more numbers or quantities.

ADDITIVE.

Number, series of numbers, or alphabetical intervals added to code to encipher it; often referred to as the key.

ADDRESS.

Expression, usually numerical, which designates a particular location in a storage or memory device or other source or destination of information in an electronic computer. (Reference: INSTRUCTION CODE.)

ADDRESS GROUP.

Group of four letters assigned to represent command(s), authority(ies), activity(ies), units(s), or geographic location(s); used primarily for the addressing of communications.

COLLECTIVE. Address group which represents two or more commands, authorities, activities, units, or any combination thereof, including the commander of the organization or group and all subordinate commanders therein.

CONJUNCTIVE. Address group, the meaning of which is incomplete unless used in combination with one or more other address groups.

GEOGRAPHIC. Address group representing a geographic location or area, which must be used in combination with a conjunctive address group.

ADDRESS INDICATING GROUP.

Address group which represents a specific set of action and/or information addresses.

ADDRESS PART.

In an electronic computer instruction, any part that is usually an address. (Reference: INSTRUCTION CODE.)

ADEE (ADDRESSEE).

Activity or individual to whom a message is directed by the originator. Addressees are indicated as either action or information.

ACTION. Activity or individual to whom a message is directed, by the originator, for action.

EXEMPTED. Addressee included in the collective address designation of a message not intended for action or information.

INFORMATION. Activity or individual to whom a message is directed by the originator for information.

ADES (AIR DEFENSE ENGINEERING SERVICE).

Contract organization of specialists from the Western Electric Company and Bell Telephone Laboratories.

ADF (AUTOMATIC DIRECTION-FINDING).

System which automatically determines and displays the direction of arrival of a radio signal. One common type employs a meter with a needle pointing to the bearing. The term usually refers to airborne equipment capable of indicating the relative bearings of transmissions in the 100-1750KC band. Normally used for homing purposes.

ADIABATIC.

Occurring without gain or loss of heat; a change of the properties, such as volume and pressure of the contents of an enclosure, without exchange of heat between the enclosure and its surroundings.

ADIV (AIR DIVISION).

1. Unit or its headquarters conventionally on a level of command above wing, composed of two or more combat wings.

2. Unit on the level of command of a numbered air force.

ADIZ (AIR DEFENSE IDENTIFICATION ZONE).

1. Airspace of defined dimensions designated by the Administrator of Civil Aeronautics within which the ready identification, location, and control of aircraft is required in the interest of national security.

2. Air space above a specified geographical area in which the control and ready classification of airborne objects is required.

ADJACENT CHANNEL

Channel immediately above or below the reference channel.

ADJACENT-CHANNEL INTERFERENCE.

Interference caused by a transmitter which is assigned for operation in an adjacent channel.

ADJACENT-CHANNEL SELECTIVITY.

Characteristic of a receiver which governs its ability to reject stations on channels adjacent to that of the desired station.

ADJUSTABLE RESISTOR.

Resistor whose resistance can be changed mechanically.

ADJUSTABLE VOLTAGE DIVIDER.

Wire-wound resistor having one or more movable terminals. Terminals can be moved along the length of the exposed resistance wire until the desired voltage values are obtained.

ADJUSTABLE-SPEED MOTOR.

Electric motor with variable speed. It can be varied over a considerable range by varying either the armature or field current, or both. Usually a shunt-wound motor, which is used with electronic motor control when operated from an ac line.

ADMITTANCE.

Lack of opposition to the flow of alternating current in a circuit (the reciprocal of impedance), usually expressed in mhos.

ADOPTED TYPE.

Type classification of equipment. Items which

have been adopted for use by the Air Force and are classified as tentative standard, standard, substitute standard, or limited standard.

ADPT (ADAPTER).

Fitting which is designed to adapt a jack, plug, or receptacle so as to make possible electrical connection by means other than those originally intended.

ADRM (AIRDROME).

Takeoff and landing area of an air base, with associated runways, hangars, taxi areas, waiting rooms, etc. Does not include maintenance shops.

ADSEC (AIR DEFENSE SYSTEMS ENGINEERING COMMITTEE).**ADTACS.**

Classified definition. (Reference: AFM 100-50.)

ADVANCE BALL.

Rounded support, often of sapphire, that rides ahead of or beside the cutting stylus of a sound recorder.

ADVANCED COMMUNICATIONS-ELECTRONICS REQUIREMENTS PLAN.

Plan to provide commands with an instrument for soliciting Headquarters, USAF, approval of communications - electronics requirements in advance of the detailed effort required for submission of the Communications - Electronics Implementation Plan.

ADVISORY GROUP ON AERONAUTICAL RESEARCH AND DEVELOPMENT.

Board established by the National Security Act of 1947 to advise Secretary of Defense as to status of scientific research relative to national security and to assist him with research and development problems. Board was abolished by Reorganization Plan No. 6 in 1953.

AEC (ATOMIC ENERGY COMMISSION).

Civilian governmental agency established by the Atomic Energy Act of 1946 to take over the organization and property of the Manhattan Project and to supervise and control the production

of nuclear-fissionable, radioactive materials in the United States.

AEDC (ARNOLD ENGINEERING DEVELOPMENT CENTER).

Air Force engineering development center located at Tullahoma, Tennessee. Named after general of the Air Force, Henry H. Arnold.

AEOLOTROPIC.

Showing different properties as to velocity of light transmission, conductivity for heat, or electricity, compressibility etc., in different directions.

AER (AERONAUTICS).

1. Art, skill, or activity of operating aircraft.
2. Science, art, or business of designing, manufacturing, and operating aircraft.

AERIAL.

The portion, usually wires or rods, of a radio transmitter or receiving station for radiating waves into space or receiving them from space. (Reference: ANTENNA.)

AERIAL ARRAY.

Antenna arrangement.

AERIAL CABLE.

Cable connected to a pole or similar overhead structure.

AERIAL MOSAIC.

Assembly of aerial photos with edges matched to form a continuous photographic presentation of a portion of the earth's surface.

AEROBEE.

Research missile developed for the Air Force. It is 20 feet long, 1.3 feet in diameter, and weighs 1690 pounds. The missile is powered by a liquid propellant rocket and uses a solid propellant for launching. Maximum speed is Mach 6. Cost per missile is \$30,000.

AERODROME CONTROL RADIO STATION.

Radio station providing communication between

an aerodrome control tower and aircraft or mobile aeronautical radio stations.

AERODROME CONTROL SERVICE.

Air traffic control service for aerodrome traffic.

AERODYNAMICS.

Branch of dynamics that treats forces exerted by air or other gases upon bodies exposed to them.

AEROLOGY.

Study of the free atmosphere throughout its vertical extent, as distinguished from investigations confined to the layer of the atmosphere adjacent to the earth's surface.

AERONAUTICAL BROADCASTING SERVICE.

Broadcasting service intended for the transmission of information related to air navigation.

AERONAUTICAL BROADCAST STATION.

Radio station which makes broadcasts of meteorological information and notices to airmen.

AERONAUTICAL CHART.

Specialized representation of mapped features of the earth, or some part of it, produced to show selected terrain, cultural and hydrographic features, and supplemental information required for air navigation, pilotage or for planning air operations.

AERONAUTICAL FIXED SERVICE.

Fixed service intended for the transmission of information related to air navigation, preparation for, and safety of flight.

AERONAUTICAL FIXED STATION.

Station in the aeronautical fixed service.

AERONAUTICAL GROUND STATION.

Radio station operated for the purpose of providing air-to-ground communication in connection with the operation of aircraft.

AERONAUTICAL MARKER BEACON STATION.

Radionavigation land station in the aeronautical radionavigation service which provides a signal to designate a small area above the station.

AERONAUTICAL MOBILE SERVICE.

Mobile service between aircraft stations and aeronautical stations, or between aircraft stations.

AERONAUTICAL RADIO BEACON STATION.

Radionavigation land station in the aeronautical radionavigation service, the emission of which is intended to enable an aircraft, or other mobile service to determine its bearing or its position in relation to the aeronautical radio beacon station.

AERONAUTICAL RADIO, INCORPORATED.

Commercial communications company formed and owned substantially by the scheduled airlines of the United States. It is the licensee of all domestic airlines enroute communication stations. In addition, it furnishes extensive service to international aircraft operations on overseas and foreign routes. The company provides both air/ground and point-to-point service. It coordinates with industry, government, and manufacturers on the standardization of electronic equipment and represents the aviation industry in RTCA and ICAO on electronic matters.

AERONAUTICAL RADIONAVIGATION SERVICE.

Radionavigation service intended for the benefit of aircraft.

AERONAUTICAL RADIO SERVICE.

1. Service carried on between aircraft stations and land stations, and between aircraft stations.
2. Special radio for air navigation.

AERONAUTICAL RADIO STATION.

Land station carrying on a service with aircraft stations.

AERONAUTICAL STANDARDS GROUP.

Air Force-Navy group concerned with establishing joint aeronautical standards.

AERONAUTICAL STATION.

Land station in the aeronautical mobile service, carrying on a service with aircraft stations.

AERONAUTICAL TELECOMMUNICATION AGENCY.

Station in the aeronautical telecommunication service.

AERONAUTICAL TELECOMMUNICATION SERVICE.

Telecommunication service provided for any aeronautical purpose.

AERONAUTICAL TELECOMMUNICATION STATION.

Station in the aeronautical telecommunication service.

AERONAUTICS.

1. Art, skill, or activity of operating aircraft.
2. Science, art, or business of designing, manufacturing, and operating aircraft.

AEW (AIRBORNE EARLY WARNING).

Air surveillance provided from long-range aircraft equipped with search radar and communications. Air surveillance information is relayed to surface stations.

AEW (AIRBORNE EARLY WARNING) RADAR.

High-powered radar set installed in aircraft for the distant detection of approaching enemy aircraft.

AEW & CON. (AIRBORNE EARLY WARNING AND CONTROL).

Air surveillance and control provided from long-range aircraft equipped with search radar and communications. Air surveillance information is relayed to surface stations.

AF (AIR FORCE).

With specific reference to the United States Air Force.

AF (AUDIO FREQUENCY).

Frequency which can be detected as a sound by the human ear. The range of audio frequencies extends approximately from 20 to 20,000 cycles per second.

AFAC (AIR FORCE ARMAMENT CENTER).**AFAUX (AIR FORCE AUXILIARY FIELD).**

Air base used to aid, or to supplement the facilities of, another air base.

AFB (AIR FORCE BASE).

Geographical location that provides space for carrying out an operation, including facilities for offices, warehousing, accommodation of personnel, and takeoff and landing of aircraft. Location is under jurisdictional control of the United States Air Force.

AFBU (AIR FORCE BASE UNIT).**AFBul (AIR FORCE BULLETIN).**

Official publication of Headquarters, USAF, containing matter of an informative or advisory nature and of continuing interest.

AFC (AUTOMATIC FREQUENCY CONTROL).

1. System tending to hold the frequency of an oscillatory circuit constant despite other influences that normally would introduce a frequency change.
2. Circuit that holds a radio receiver on the frequency of the station to which it is tuned.

AFCOMMSTA.

General message originated by the director of communications, Headquarters, USAF, normally containing instructions or changes to publications pertinent to the operation of USAF communications centers.

AFCOMMSTACON.

General message originated by the director of communications, Headquarters, USAF, normally containing instructions or changes to publications pertinent to the operation of USAF communications centers located within the ConUS.

AFCRC (AIR FORCE CAMBRIDGE RESEARCH CENTER).

Research center located at Cambridge, Massachusetts, under the Air Research and Development Command, concerned with electronic, atomic, geophysical, and other scientific research.

AFDCCO (AIR FORCE DEPARTMENTAL CATALOG COORDINATING OFFICE).

AFF (ARMY FIELD FORCES).

1. Ground forces operating in the field.
2. Units, general headquarters, installations, and equipment that comprise the forces in a theater of operation.

AFFTC (AIR FORCE FLIGHT TEST CENTER).

AFHUFs (ARMED FORCES HEADQUARTERS UNIFICATION FACILITIES SERVICES).

AFI (AFRICAN-INDIAN OCEAN REGION).

AFL (AIR FORCE LETTER).

Administrative Air Force publication, general in application, containing regulatory material considered to be temporary in duration, or informative matter that may be of either temporary or permanent interest.

AFM (AIR FORCE MANUAL).

Manual published by order of the Secretary of the Air Force, determined to be of interest, and applicable to two or more major air commands.

AFM & SD (AIR FORCE MATERIAL AND SERVICE DIRECTIVE).

AFMTC (AIR FORCE MISSILE TEST CENTER).

AFNA (AIR FORCE WITH NAVY).

AFP (AIR FORCE PAMPHLET).

Air Force publication that disseminates information considered of continuing usefulness, but not considered appropriate for issuance in other types of Air Force publications.

AFPS (ARMED FORCES PRESS SERVICE).

Weekly clipping service, administered by the Army, which supplies materials to interested service newspapers.

AFR (AIR FORCE REGULATION).

Basic formal order, issued by the Secretary of the Air Force, setting forth rules, policy statements, procedures, responsibilities, organizational frameworks, or the like for the government and operation of the Air Force, and having a permanent nature.

AFRS (ARMED FORCES RADIO SERVICE).

Radio service, including maintenance, programs, transcriptions, etc., available to armed forces overseas and to certain service and veteran hospitals in the United States.

AFSAC (ARMED FORCES SECURITY AGENCY COUNCIL).

AFSC (AIR FORCE SPECIALTY CODE).

1. Code set up for identifying all Air Force Specialties.
2. Combination of digits, or digits and letters, identifying a particular Air Force Specialty.

AFSMAAG (AIR FORCE SECTION, MILITARY ASSISTANCE ADVISORY GROUP).

AFSS (AIR FORCE SECURITY SERVICE).

AFSSO (AIR FORCE SPECIAL SECURITY OFFICER) SYSTEM.

Classified definition. (Reference: AFM 100-50.)

AFSWS (AIR FORCE SPECIAL WEAPONS CENTER).

Subordinate command of the Air Research and Development Command responsible for the developmental testing of atomic and other special weapons.

AFTERBURNER.

Device for introducing more fuel directly into the thrust chamber of a jet engine to produce more thrust for short periods.

AFTERGLOW.

Persistence of luminosity in a gas-discharge tube after the voltage has been removed or on the screen of a cathode-ray tube after the electron beam has moved.

AFTRC (AIR FORCE AIR TRAINING COMMAND).

Major air command with headquarters at Scott Air Force Base, Illinois, having the mission of providing training for Air Force officers and airmen.

AFUS (AIR FORCE OF THE UNITED STATES).

Designation of the overall USAF. Between 1947 and 1951, this term was used to distinguish the overall organization from its regular component, ambiguously called the United States Air Force.

AFWA (AIR FORCE WITH ARMY).**AFWAR (AIR FORCE PERSONNEL ON DUTY WITH ARMY).****AGARD (ADVISORY GROUP ON AERONAUTICAL RESEARCH AND DEVELOPMENT).**

Board established by the National Security Act of 1947 to advise Secretary of Defense as to status of scientific research relative to national security and to assist him with research and development problems. Board was abolished by Reorganization Plan No. 6 in 1953.

AGC (AUTOMATIC GAIN CONTROL).

1. Type of circuit used to maintain the output volume of a receiver constant, regardless of variations in the signal strength applied to the receiver.
2. Self-acting compensating device which maintains the output of a transmission system constant within narrow limits in the face of wide variations in the attenuation of the system.
3. Radar circuit which presents saturation of the radar receiver by long blocks of received signals or by a carrier modulated at low frequency.

AGCA (AUTOMATIC GROUND-CONTROLLED APPROACH).**AGENCY.**

1. Office or organization authorized to act for or in behalf of another, as for a commander, for the executive branch of the government, or for any other organization.
2. Office or organization serving as an instrument for accomplishing a definite purpose.

AERONAUTICAL TELECOMMUNICATION.

Agency responsible for operating a station or stations in the aeronautical telecommunication service.

ARMED SERVICES ELECTRO-STANDARDS.

Joint service organization which prepares and promulgates standard joint specifications for the electronic parts and materials used in the communications and electronics equipments of the armed forces.

AGENCY OF COMMUNICATION.

Facility which embraces personnel and equipment necessary to provide communications.

AGENCY OF SIGNAL COMMUNICATION.

Includes all personnel and equipment necessary to operate a signal communication installation. It may include one or more means of communication.

AGING.

Allowing a permanent magnet, capacitor, meter, or other device to remain in storage for a period of time, sometimes with voltage applied, until the characteristics of the device become essentially constant.

AGL (AIRBORNE GUN LAYING) RADAR.

Airborne radar set, in interceptor aircraft, used for plane-to-plane fire control.

AGLC (AIR-GROUND LIAISON CODE).

Set of symbols for a limited number of words, phrases, and sentences used for communication between air and ground forces.

AGONIC LINE.

Line on the earth's surface, at all points of which the magnetic declination is zero.

AI (AIRBORNE INTERCEPTION).

Airborne interception performed by an interceptor equipped with airborne radar.

AIA (AIRBORNE INTERCEPTOR AIRCRAFT).

Airborne radar set for aircraft interception.

AIC (AIR INTERCEPTION CONTROL) COMMON.

Designating the communications channel formerly known as ground control interception common.

AIDED TRACKING.

System of tracking a target signal in bearing, elevation, range, or any combination of these variables.

AIMING CIRCLE.

Instrument for measuring angles in azimuth, site, and for general topographic work.

AIP (AIR LIAISON PARTY).

AIR (AIRCRAFT).

Any machine or craft designed to go through the air.

AIR.

Air, in radio work, is considered as the most perfect dielectric, and an insulator. A capacitor with air between its plates shows little change of capacity with change of frequency, and in the air dielectric there is no power loss.

AIR AID TO INTERCEPT RADAR.

Airborne radar set used in interceptor aircraft to locate, track, and intercept hostile aircraft.

AIR ALERT MISSION.

Air support mission which starts with airborne aircraft awaiting the designation of a target. The aircraft carry a predetermined standard load suitable for attacking any of several types of targets that may be assigned.

AIR ATTACHE.

Rated Air Force commissioned or warrant officer belonging to an ambassador's or minister's diplomatic staff. His primary duty is to collect, by overt methods, air intelligence information regarding the country in which he is on duty.

AIR BASE.

Geographical location usually providing space for aircraft operations.

AIR BASE SIMULATOR.

Individual in the direction center training and

battle simulation section responsible for simulating an air base operation section.

AIR BRAKE.

Device fastened to a rope leader ribbon to aid in unwinding the roll.

AIR CAPACITOR.

Capacitor using air as the dielectric material between its plates.

AIR COMMAND AND STAFF SCHOOL.

Member college of the Air University which serves as an educational and doctrinal center in the field of command and staff organization, procedure, and techniques. Includes the Command and Staff School, Squadron Officer School, Air Weapons Course, Air Weapons Orientation Course, and Academic Instructor Course.

AIR CONTROL CENTER.

Principal air operations installation from which all aircraft and air warning functions of tactical air operations are controlled.

AIR CONTROL TEAM.

Subordinate operational component of the land-based tactical air control group designed for the control of aircraft from forward observation posts. The air control team operates at division, regiment, or battalion level.

AIR CONTROLLER.

Individual, in naval usage, specially trained for and assigned the duty of control (by use of radio, radar, or other means) of such aircraft as may be allotted to him for the defense of his area. (Reference: FIGHTER DIRECTOR.)

AIR COORDINATING COMMITTEE.

National committee established to provide for the fullest development and coordination of aviation policies and activities of federal agencies and to formulate the position of US representatives in the international circuit aviation organization.

AIR DEFENSE.

1. All measures designed to nullify or reduce

the effectiveness of the attack by hostile aircraft or guided missiles after they are airborne.

2. Sum total of all measures taken for defense against attack on a target area by enemy airborne objects.

ACTIVE. Action taken to destroy an enemy air attack.

PASSIVE. All measures, other than active defense, taken to minimize the effects of hostile air action.

AIR DEFENSE AIR TRAFFIC CONTROL SYSTEMS INTEGRATION.

Joint CAA and military use of air defense and air traffic control radar surveillance facilities for the control of air traffic.

AIR DEFENSE AREA.

1. Specifically defined area within which identification of airborne objects is not required if the flights originated in the area, except during periods of air defense emergency.

2. Specifically defined and established territory that includes objectives of possible enemy air attack and for which air defense must be provided.

AIR DEFENSE COMBAT ZONE.

That area extending outward from the target areas which has contiguous radar coverage and within which air defense measures are employed.

AIR DEFENSE COMMAND.

Air Force command charged with the execution of North American Air Defense Command policies for Air Force participation in air defense.

AIR DEFENSE CONTROL.

Control from the ground or ship of all elements engaging in active air defense.

AIR DEFENSE CONTROL CENTER.

Land based, air-operations installation which, with the aid of early-warning installations, air defense direction centers, and other organizations and facilities, provides aircraft control

and direction of active air defense in a given sector.

AIR DEFENSE DIRECTION CENTER.

Ground control intercept station that controls interceptors and antiaircraft fire, and reports the progress of air defense to the air defense control center.

AIR DEFENSE EMERGENCY.

Declaration of an emergency condition based on any state of events indicating to commander in chief, North American Air Defense Command, or higher authority, that hostile action is in progress or imminent.

AIR DEFENSE ENGINEERING SERVICE.

Contract organization of specialists from the Western Electric Company, and Bell Telephone Laboratories.

AIR DEFENSE IDENTIFICATION ZONE.

1. Air space of defined dimensions designated by the administrator of civil aeronautics within which the ready identification, location, and control of aircraft is required, in the interest of national security.

2. Air space above a specified geographical area in which the control and ready classification of airborne objects is required.

AIR DEFENSE REGION.

Geographical subdivision of an air defense area.

AIR DEFENSE SECTOR.

1. Geographical subdivision of an air defense region.

2. Air Force headquarters responsible for the air defense of a sector.

AIR DEFENSE SUBSECTOR.

Geographical area in which air defense measures are accomplished by an air defense direction center.

AIR DEFENSE SYSTEM.

Structure of interdependent elements integrated to accomplish an assigned operational task of air defense.

AIR DEFENSE SYSTEMS ENGINEERING COMMITTEE.

AIR DEFENSE WARNING.

Degree of expected imminence of hostile attack which may be specified under authority of air defense emergency.

AIR DEPOT.

Depot providing supply or maintenance for aircraft of Air Force organizations.

AIR DIVISION.

1. Unit, or its headquarters, conventionally on a level of command above wing, composed of two or more combat wings.
2. Unit on the level of command of a numbered air force.

AIR DIVISION COC (COMBAT OPERATIONS CENTER).

Command post in, or adjacent to, an ADCC for the use of the division commander and his staff in directing and supervising the air defense of the sector.

AIR ELECTRONICS OFFICER.

USAF officer who manages air electronic activities including installation, operation, maintenance, repair, and modification of airborne electronic equipment and commands air electronics units.

AIR ENVIRONMENT.

General communications-electronics term which is used to define the aggregate of all airborne equipment which is a part of communications-electronics system. This should be distinguished from the equipment which may be installed on the ground, and hence would be termed as belonging to the ground environment.

Note. IFF system and navigational aids system may be divided into a ground and air environment.

AIR FORCE.

With specific reference to the United States Air Force.

AIR FORCE AIR TRAINING COMMAND.

Major air command with headquarters at Scott Air Force Base, Illinois, having the mission of providing training for Air Force officers and airmen.

AIR FORCE AUXILIARY FIELD.

Air base used to aid, or to supplement the facilities of, another air base.

AIR FORCE BASE.

Geographical location that provides space for carrying out an operation, including facilities for officers, warehousing, accommodation of personnel, and takeoff and landing of aircraft. Location is under jurisdictional control of the United States Air Force.

AIR FORCE BASE COMPLEX.

Air base for support of Air Force units consisting of landing strips and all components or related facilities for which the Air Force has operating responsibility, together with interior lines of communication and the minimum surrounding area required for local security.

AIR FORCE BULLETIN.

Official publication of Headquarters, USAF, containing matter of an informative or advisory nature and of continuing interest.

AIR FORCE CAMBRIDGE RESEARCH CENTER.

Research center located at Cambridge, Massachusetts, under the Air Research and Development Command, concerned with electronic, atomic, geophysical, and other scientific research.

AIR FORCE COMMUNICATIONS COMPLEX.

All Air Force communications. This term replaces GLOBECOM and STRATCOM.

AIR FORCE COMMUNICATIONS NETWORK.

World-wide integrated teletype tape-relay network comprised of land lines and radio channels

designed to carry Air Force message traffic. It is an integral part of the Air Force strategic communications system.

AIR FORCE LETTER.

Administrative Air Force publication, general in application, containing regulatory material considered to be temporary in duration, or informative matter that may be of either temporary or permanent interest.

AIR FORCE MANUAL.

Manual published by order of the Secretary of the Air Force, determined to be of interest and applicable to two or more major air commands.

AIR FORCE OF THE UNITED STATES.

Designation of the overall USAF. Between 1947 and 1951, this term was used to distinguish the overall organization from its regular component, ambiguously called the United States Air Force.

AIR FORCE PAMPHLET.

Air Force publication that disseminates information considered of continuing usefulness, but not considered appropriate for issuance in other types of Air Force publications.

ARMED FORCES PRESS SERVICE.

Weekly clipping service, administered by the Army, which supplies materials to interested service newspapers.

AIR FORCE REGULATION.

Basic formal order issued by the Secretary of the Air Force setting forth rules, policy statements, procedures, responsibilities, organizational frameworks, etc., for the government and operation of the Air Force, and having a permanent nature.

AIR FORCE SPECIAL SECURITY OFFICER SYSTEM.

Classified definition. (Reference: AFM 100-50.)

AIR FORCE SPECIAL WEAPONS CENTER.

Subordinate command of the Air Research and Development Command responsible for the developmental testing of atomic and other special weapons.

AIR FORCE SPECIALTY CODE.

1. Code set up for identifying all Air Force Specialties.
2. Combination of digits, or digits and letters, identifying a particular Air Force Specialty.

AIR FORCE STRATEGIC COMMUNICATIONS COMPLEX.

World-wide, long-range, point-to-point, and air-ground-air communications system of the Air Force designed for control of air operations on a global scale. It consists of an integrated and engineered system of interconnected Air Force radio stations, together with other leased or allocated long-haul wire and radio channels, necessary terminal equipment, relay facilities, communications centers, cryptographic centers, etc., for use by the Air Force as a whole in the accomplishment of its global mission. It does not include internal tactical and special-purpose communications systems of the various commands below the major command level required in the accomplishment of their missions, except as specifically designated by Headquarters, USAF.

AIR FORCE SUPPLIES.

Items or categories of items which are (a) provided through Army supply agencies for use by Air Force activities; (b) provided through Army supply agencies for use by the Air Force and in possession of Air Force activities, exclusive of items on a temporary-loan basis from the Department of the Army; (c) Army purchased supplies stored as Air Force credits under custody of the Army.

AIR GAP.

Air space between two objects which are electrically or magnetically related.

AIR INTERCEPTION.

Visual or radar contact by a friendly aircraft with an unidentified aircraft.

AIR INTERCEPTION CONTROL COMMON.

Designating the communications channel formerly known as ground control interception common.

AIR LIAISON OFFICER.

Experienced pilot, familiar with operational procedures, capabilities, and limitations of air power. An ALO is provided for each corps and division headquarters furnished tactical air support. The ALO is responsible for technical assistance to the ground staff in formulating requirements for air support and provides continuous guidance on air matters. He is a direct representative of the tactical air force commander.

AIR MATERIEL AREA.

1. One of the several areas set up by the Air Materiel Command for expediting Air Force maintenance and the supply of Air Force organizations and installations within those areas.
2. Organization that operates any one of these areas under the Air Materiel Command, comparable in echelon to a numbered air force.

AIR MATERIEL COMMAND.

Major air command of the Air Force that provides logistic support to the United States Air Force.

AIR MINISTRY EXPERIMENTAL STATION.

British ground radar station in an early-warning system.

AIR MOVEMENT DATA.

Flight plan data used in reckoning aircraft movement. The data may be presented in either a situation or digital display.

Correlated Air-Movement Data: Air-movement data which has been associated with a track.

Uncorrelated Air-Movement Data: Air-movement data which has not been associated with a track.

AIR MOVEMENTS INFORMATION SECTION.

Unit of the civil aeronautics administration which provides flight-plan information to the identification branch of a direction center. Such information pertains to friendly airborne objects which are, or will be, operating in the organizations' area.

AIR NATIONAL GUARD.

Military force, comprising those units and per-

sonnel organized and partially maintained by the several states, territories, or District of Columbia, for which certain federal responsibility is vested in the Department of the Air Force, and which, while in the service of the United States, constitute a component of the United States Air Force.

AIR NAVIGATION DEVELOPMENT BOARD.

Board, reporting to the department of commerce through the civil aeronautics administration, which was organized to develop a nation-wide air navigation system to serve the needs of civil aviation and nontactical military aviation, and capable of effective integration into any air-defense system established by the department of defense.

AIR NAVIGATION RADIO AIDS.

Aeronautical ground stations, radio beacons, direction finders, and similar aids.

AIR PROVING GROUND.

Air Force installation operated at Eglin Air Force Base by the Air Proving Ground Command.

AIR PROVING GROUND COMMAND.

Major air command in the USAF organized primarily to determine the operational suitability of materiel by test and evaluation.

AIR POSITION INDICATOR.

Airborne computing system which presents a continuous indication of aircraft position on the basis of aircraft-heading, airspeed, and elapsed time.

AIR RAID WARNING.

Information concerning approaching enemy aircraft and/or guided missiles, which is disseminated primarily for passive air defense purposes.

AIR RAID WARNING CONDITIONS.

Degree of air raid probability according to the following:

Yellow Alert: Attack likely; intelligence has been received indicating that hostile aircraft are over or en route toward the north american continent.

Red Alert: Attack imminent; hostile aircraft have been identified and are within the air defense sector or within adjacent sectors with a high probability of entering the subject air defense sector.

White Alert: All clear; notification to be given when the danger of either yellow-or-red-type air raid warning is over.

AIR RESCUE SERVICE.

Air Force organization under the Military Air Transport Service that provides air rescue, including search for both civilian and military aircraft in remote areas, either on land or sea.

AIR RESEARCH AND DEVELOPMENT COMMAND.

Major air command in the USAF that carries out the research and development activities required for the accomplishment of Air Force missions.

AIR RESERVE OFFICER TRAINING CORPS.

Training corps under the control of the USAF, with detachments in colleges and universities, to prepare cadets for service in one of the components of the USAF.

AIR ROUTE.

Navigable airspace between two points, identified to the extent necessary for the application of flight rules.

AIR ROUTE TRAFFIC CONTROL CENTER.

Civil aeronautics administration facility that establishes and monitors routes and altitudes for aircraft flying within a given control area.

AIR SOUNDING.

Measurements of air conditions at high altitudes by a radiosonde or similar equipment.

AIR SPACE PANEL.

Agency responsible for ensuring that conflicts in the use of the navigable air space are avoided or reduced by coordinating and resolving joint problems arising from military, civil, and other use of air space.

AIR SPEED.

Velocity of aircraft relative to the surrounding atmosphere.

AIR SURVEILLANCE.

Systematic observation of air space by electronic, visual, or other means. Primarily for the purpose of identifying and determining the movements of all aircraft and large missiles, friendly or enemy, in the air space under observation.

AIR SURVEILLANCE OFFICER.

Officer responsible for the performance of the air surveillance functions.

AIR SURVEILLANCE TECHNICIAN.

Noncommissioned officer who assists the air surveillance officer.

AIR TACTICS OFFICER.

Officer responsible for forming hostile tracks into raids and interceptor tracks into groups; also responsible for forwarding summarized data on raids and groups to a supervisory organization.

AIR TACTICS TECHNICIAN.

Noncommissioned officer who assists the air tactics officers.

AIR TRAFFIC CONTROL.

Service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic. The service is administered by air route traffic control centers and airport traffic control towers.

AIR TRAFFIC CONTROL AND NAVIGATION PANEL.

Agency responsible for review and coordinating of implementation programs and plans, policies and standards, rules and procedures concerning air traffic control within the United States.

AIR TRAFFIC CONTROL CENTER.

Principal communications and operations center from which all aircraft are controlled under IFR conditions in the vicinity of an airfield. The complete system consists of a suitable long-range radar installation capable of observing aircraft

along airways, a method of controlling inbound and outbound traffic within the traffic pattern of the airfield, and a precision radar unit capable of providing the pilot of an aircraft with information that will permit a safe landing.

AIR TRAFFIC CONTROL CLEARANCE.

Authorization by an air traffic control unit for an aircraft to proceed under specified conditions.

AIR TRAFFIC CONTROL INSTRUCTIONS.

Directions issued by an air traffic control unit for an aircraft to proceed or to delay its flight in a specified manner.

AIR TRAFFIC CONTROL PLOTTING DISPLAY.

Any type of enlarged radar display which is intended for use in the control of air traffic and which is so mounted that the display is horizontal. The radar controller records aircraft positions by placing aircraft position markers on the horizontal display and sequences traffic by reference to the data so displayed. In the event of a failure of the surveillance radar equipment, the markers preserve the pattern of all traffic in the area as it was at the time of the failure and provide initial data for the safe handling of traffic by other means.

AIR TRAFFIC CONTROL SERVICE.

Service provided to expedite and direct air traffic so as to prevent collisions between aircraft and obstructions or other aircraft.

AIR TRAINING COMMAND.

Major air command with headquarters at Scott Air Force Base, Illinois; having the mission of providing training for Air Force officers and airmen.

AIR U (AIR UNIVERSITY).

Major air command with headquarters at Maxwell Air Force Base, Alabama. Functions as an Air Force doctrinal, educational, and research center. Principal components are the Air War College, Air Command and Staff College, School of Aviation Medicine, Institute of Technology, Reserve Officer's Training Corps, Extension Course Institute, and Research Studies Institute.

AIR WAR COLLEGE.

School of the Air University charged with the schooling of senior officers for high command and staff duty, and with the development of doctrine on the broad use of air power.

AIR WEATHER SERVICE.

Service under the Military Air Transport Service providing meteorological service primarily for the armed services.

AIR-AIR.

Communications between one airborne station and one or more other airborne stations.

AIR-BOUND.

Lubricating-oil or fuel-oil system may become air-bound when air enters the system through vents or leaks. The air, by being compressed by the fluid flowing through the lines, interferes with the continuous flow of the fuel or lubrication and may cause the system to stop operating or cause serious damage.

AIR-CORE COIL.

Coil without metal in its magnetic circuit.

AIR-CORE TRANSFORMER.

Transformer (usually RF) having a nonmetallic core. Transformers wound on a solid insulating substance such as isolantite, are assumed to have an air core.

AIR-GROUND COMMUNICATIONS.

Method or means of conveying information between aircraft in flight and ground stations.

AIR-GROUND CONTROL RADIO STATION.

Aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.

AIR-GROUND LIAISON CODE.

Set of symbols for a limited number of words, phrases, and sentences used for communication between air and ground forces.

AIR-GROUND OPERATIONS SECTION.

Part of the joint operation center. (Reference: JOINT OPERATION CENTER.)

AIR-GROUND OPERATIONS SYSTEM.

Operations system operated by the ground forces, in Army and Air Force usage, to provide the ground commander with the means for receiving and processing requests of subordinate ground commanders for air missions and for rapid and continuous exchange of battle information and intelligence. It includes an air-ground operations section, ground liaison officer teams, and the necessary communication facilities.

AIR-GROUND RADIO FREQUENCY.

Specified frequency agreed upon for transmission from an aircraft station to an aeronautical ground station.

AIR-GROUND-AIR.

Communications between either an airborne station and a ground station, vice versa, or in any combination. Commonly referred to as: air-to-ground; ground-to-air, air-ground, or ground-air.

AIR-TO-GROUND.

Pertains to communication from airborne objects to the ground.

AIR-TO-GROUND COMMUNICATION.

One-way communication from aircraft to stations or locations on the surface of the earth.

AIR-TO-GROUND GUNNERY RANGE.

Area set aside or designated for air-to-ground gunnery practice missions.

AIR-TO-SURFACE MISSILE.

Missile designed to be dropped from aircraft, which upon release, is guided to a surface target, such as an airfield, by means of an internal homing device or radio control.

AIR-TO-SURFACE VESSEL.

Search radar sets used in aircraft for detecting objects on the surface of the sea.

AIR-TO-UNDERWATER MISSILE.

Missile designed to be dropped from aircraft, and upon contact with the surface of the water, to pursue or seek out an underwater moving target, such as a submarine, by means of an internal or radio guided homing device.

AIR-TRANSPORTABLE UNITS.

Ground units, other than airborne, which are trained and whose equipment is adapted for movement and delivery by transport aircraft.

AIRA (AIR ATTACHE).

Rated Air Force commissioned or warrant officer belonging to an ambassador's or minister's diplomatic staff. His primary duty is to collect by overt methods air intelligence information regarding the country in which he is on duty.

AIRBORNE.

1. Personnel, equipment, etc., transported by air.
2. Material being, or designed to be, transported by aircraft, as distinguished from weapons and equipment installed in and remaining a part of the aircraft.
3. Aircraft, from the instant it becomes entirely sustained by air until it ceases to be so sustained. A lighter-than-air aircraft is not considered to be airborne when it is attached to the ground, except that moored balloons are airborne whenever sent aloft.
4. Track status indicating that an interceptor is airborne. This status exists until detection and initiation are accomplished.

AIRBORNE EARLY WARNING.

Air surveillance provided from long-range aircraft equipped with search radar and communications. Air-surveillance information is relayed to surface stations.

AIRBORNE EARLY WARNING AND CONTROL.

Air surveillance and control provided from long-range aircraft equipped with search radar and communications. Air-surveillance information is relayed to surface stations. The system can also control friendly airborne objects.

AIRBORNE EARLY WARNING RADAR.

High-powered radar set installed in aircraft for the distant detection of approaching enemy aircraft.

AIRBORNE EARLY WARNING SET.

Airborne radar equipment providing long-range

detection, identification, and relaying of the radar signals to ground or ship-borne stations.

AIRBORNE GUN LAYING RADAR.

Airborne radar set in interceptor aircraft, used for plane-to-plane fire control.

AIRBORNE INTERCEPT RADAR.

Short-range airborne radar employed by fighters and interceptors to locate targets.

AIRBORNE INTERCEPTION.

Interception performed by an interceptor equipped with airborne radar.

AIRBORNE INTERCEPTOR AIRCRAFT.

Airborne radar set for aircraft interception.

AIRBORNE MOVING TARGET INDICATOR.

Capability given to airborne radars so that they may detect moving vehicles of all descriptions.

AIRBORNE OBJECT.

Any machine or craft in flight in the earth's atmosphere or in outer space.

AIRCOM (AIR FORCE STRATEGIC COMMUNICATIONS) COMPLEX.

World-wide, long-range, point-to-point and air-ground-air communications system of the Air Force designed for control of air operations on a global scale. It consists of an integrated and engineered system of interconnected Air Force radio stations, together with other leased or allocated long-haul wire and radio channels, necessary terminal equipment, relay facilities, communications centers, cryptographic centers, etc., for use by the Air Force as a whole in the accomplishment of its global mission. It does not include internal tactical and special-purpose communications systems of the various commands below the major level required in the accomplishment of their missions, except as specifically designated by Headquarters, USAF. This term replaces GLOBE COM and STRATCOM.

AIRCOMNET.

World-wide integrated teletype relay network comprised of land lines and radio channels designed to carry Air Force message traffic. It

is an integral part of the Air Force strategic communications system.

AIRCRAFT.

1. Any machine or craft designed to go through the air.
2. Powered fixed-wing airplane.

AIRCRAFT BONDING.

Electrically connecting together all of the metal structure of the aircraft, including the engine and metal covering on the wiring.

AIRCRAFT CONTROL AND WARNING.

Activity for detecting, tracking, and reporting airborne objects and for evaluating information received. Its purpose is to furnish air-defense warnings and to use air-defense weapons to combat an enemy.

AIRCRAFT CONTROL AND WARNING OFFICER.

Member of the battle staff responsible for air surveillance, identification, and control.

AIRCRAFT CONTROL AND WARNING SYSTEM.

Control and warning system established to control and report the movement of aircraft. It consists of observation facilities (radar and/or visual), control centers, and/or filter centers, and the necessary communications.

AIRCRAFT DB RATING.

Rating, in decibels, assigned to each type aircraft to indicate its approximate radar cross section. The ratings are used primarily with the radar coverage indicator.

AIRCRAFT STATION.

Mobile station installed onboard any type aircraft and continuously subject to human control.

AIRCRAFT TRANSMITTER RELAY RACK.

Standard size rack for mounting radio or radar components.

AIRDROME.

Takeoff and landing area of an air base, with associated runways, hangars, taxi areas, waiting rooms, etc. Does not include maintenance shops.

AIRFIELD.

Any aerodrome other than an airport.

AIRFIELD APPROACH AREA.

Area extending outward from each end of a landing strip within which no natural, or man made object should project above a predetermined safe angle for ascent or descent of aircraft.

AIRGLOW.

Light source always in the sky, which comes from atmospheric particles which absorb solar energy during the day and radiate it back to earth at night.

AIRHEAD.

1. Designated area in a hostile or threatened country which, when seized and held, ensures the continuous air landing of troops and material and provides maneuver space necessary for projected operations. It is normally the area seized in the assault phase of an airborne operation.

2. Designated location in an area of operations used as a base for supply and evacuation by air.

AIRMAN'S GUIDE.

Directory of airports, radio facility data, and notices to airmen published by the civil aeronautics administration.

AIROPNET (AIR OPERATIONS NETWORK).**AIRPLANE DIAL.**

Round radio receiver dial over which a pointer rotates to indicate the frequency of the station being received.

AIRPLANE INSULATOR.

Insulator used particularly for radio antennas on aircraft.

AIRPORT.

Any aerodrome at which facilities available to the public are provided for the shelter, servicing or repair of aircraft, and for receiving or discharging passengers or cargo.

AIRPORT BEACON.

Beacon (light or radio) located at or near an

airport for the purpose of indicating the location of the airport.

AIRPORT CONTROL STATION.

Furnishes communications limited to actual aviation needs between an airport control tower and aircraft in the immediate vicinity.

AIRPORT RADAR CONTROL.

Surveillance radar portion of radar approach control engaged in pick-up, holding, pattern, etc., operations.

AIRPORT RUNWAY BEACON.

Radio-range beacon that defines one or more approaches to an airport.

AIRPORT SURFACE DETECTION EQUIPMENT.

Short-distance radar having high resolution and discrimination. It provides, in graphic or pictorial form, for use by traffic control personnel: (a) plan position indication of the airport surface with the location of runways, taxiways, and ramps clearly defined, and (b) presentation of all aircraft, vehicular, and other traffic, both moving or stationary.

AIRPORT SURVEILLANCE RADAR.

Radar located on or near an airport to provide an indication of the bearing and distance of each aircraft within the terminal area in which the airport is located. It is employed to vector and give navigational guidance to arriving and departing aircraft, in the control of air traffic, within the terminal area; it does not provide data regarding the elevation of aircraft.

AIRPORT TRAFFIC CONTROL TOWER.

Facility established to provide adequate supervision of air traffic within an airport control sector by means of radio, lights, or other signals.

AIRSPACE WARNING AREA.

Same as danger area but located more than three miles beyond the United States coast line.

AIRSTORDEPT (AIR STORAGE DEPOT).

Canadian Navy and RCAF abbreviation for air storage depot. Abbreviation will be followed by identifying location.

AIRWAY.

Control area or portion thereof, established in the form of a corridor equipped with radio navigational aids.

AIRWAY BEACON.

Beacon, other than an airport beacon, located on or near an airway, and used for the purpose of indicating the location of the airway.

AIRWAYS AND AIR COMMUNICATIONS SERVICE.

1. Service under the Military Air Transport Service providing point-to-point and ground-to-air communication along airways and air routes.
2. Service under the Military Air Transport Service providing military air traffic control and other communication facilities as may be authorized by the chief of staff.

AIRWAYS MODERNIZATION BOARD.

Board established for the development on a long-range, full-scale research and development program designed to alleviate the nation's serious air-traffic problems.

AIRWAYS STATION.

Ground communication installation, established, manned, and equipped to communicate with aircraft in flight as well as with other designated airways installations for the purpose of expeditious and safe movement of aircraft.

AJ (ANTIJAMMING).

1. Art of minimizing the effect of enemy electronic countermeasures to permit the echoes from targets detected by the radar to be visible on the indicator.
2. Controls or circuit features incorporated to minimize jamming.

AJAX.

Frequency dispersal radar.

AL.

International Telecommunications Union designation for Aeronautical Radionavigation Land Station.

ALAMA.

General message originated by the commander, Air Materiel Command, to subordinate units.

ALARM.

Device such as a lamp, bell, horn or buzzer, or combination of these elements, arranged to call attention to some unusual condition.

BATTERY. Signal calling attention to an abnormal power supply condition.

CONTACTOR. Signal calling attention to lowered pressure in a cable gas pressure system.

CRASH. Relay circuit which functions to connect the telephones of all emergency services, such as fire department, ambulance, and other personnel affected, from a central location.

OFFICE. Signal calling attention to a total or partial failure, or other abnormal condition, in an office.

ALASKAN AIR COMMAND.

Air Force major air command with the mission of organizing and conducting the air defense of Alaska.

ALCOAST.

General message originated by the Chief of Naval Operations, promulgating communication information.

ALCOMLANT.

General message originated by the Chief of Naval Operations as a subdivision of the ALCOM series for the Atlantic and Mediterranean areas.

ALCOMPAC.

General message originated by the Chief of Naval Operations as a subdivision of the ALCOM series for the pacific areas.

ALDIST.

General message originated by the Commandant, United States Coast Guard, to provide instructions or information of limited applicability, primarily to district commanders.

ALERT.

1. Readiness for action, defense, or protection.

2. Warning signal of a real or threatened danger, such as an air attack.
3. Period of time during which troops stand by in response to an alarm.
4. To forewarn; to ready for action.

ALERTING SERVICE.

Service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organizations as required.

ALEUTIAN ISLANDS.

Chain of islands southwest of Alaska.

ALEXANDERSON ALTERNATOR.

Mechanical ac generator used in the early days of radio to generate energy.

ALFINAF.

General message originated by Commander, Air Force Finance Center.

ALIGN.

1. Adjust circuits to resonate at a given frequency.
2. Position objects so that they are all in a straight line.

ALIGNING TOOL.

Small screw driver, socket wrench, or special tools, constructed partly or entirely of nonmagnetic materials, used to align radio circuits.

ALIGNMENT.

1. Process of adjusting the tuned circuits of a receiver to a given frequency.
2. Process of adjusting two or more components of a system so that their functions are properly synchronized.

ALIGNMENT CHART.

Chart or diagram on which equations can be solved graphically by placing a straightedge on the two known values and reading the answer where the straight edge crosses the scale for the unknown value.

ALIGNMENT PIN.

Pin in the center of the base of an octal, loktal, or other tube having a single vertical projecting rib that aids in correctly inserting the tube in its socket.

ALIVE.

Electrically connected to a source of potential difference, or electrically charged so as to have a potential different from that of the earth.

ALJAP.

General message originated by the United States joint communications-electronics committee, normally containing corrections to or instructions regarding publications published by that committee.

ALKALINE BATTERY.

Secondary cell or battery using an alkaline solution as the electrolyte.

ALL-METAL TUBE.

Vacuum tube having a metal envelope, with electrode leads passing through glass beads fused into the metal housing.

ALL-PASS NETWORK.

Network designed to introduce phase shift or delay without introducing appreciable attenuation at any frequency.

ALL-PASS TRANSDUCER.

Transducer, of which the attenuation constant is practically zero for all frequencies from zero to infinity.

ALL-RELAY CENTRAL OFFICE.

Automatic dial switchboard, in a central office, using relay circuits only to make line interconnections.

ALL-RELAY DIAL SYSTEM.

Telephone system using relays only.

ALL-RELAY EXCHANGE.

Exchange where all switching is done by relay equipment.

ALL-RELAY SYSTEM.

Automatic telephone switching system in which

all switching functions are accomplished by relays.

ALL-WAVE ANTENNA.

Receiving antenna that responds to a wide range of frequencies.

ALL-WAVE OSCILLATOR. (Reference: ALL-WAVE SIGNAL GENERATOR.)

ALL-WAVE SIGNAL GENERATOR.

Test instrument capable of generating an unmodulated or tone-modulated radio-frequency signal at any frequency needed for aligning or servicing radio receivers and amplifiers.

ALL-WEATHER.

Usable or serviceable under any conditions of weather or visibility.

ALLANTFLT.

General message originated by the Commander-in-Chief, United States Atlantic Fleet.

ALLIED COMMUNICATION PUBLICATION.

Agreed communications publication prepared in conjunction with other nations. It is approved for United States and allied use by members of the United States joint communications-electronics committee. ACP's are published to provide communications-electronics instructions and procedures that have allied as well as joint application and may also be authorized by each of the United States services for intra-service use.

ALLIED HEADQUARTERS.

Allied Headquarters or SHAPE and those established by SHARPE that are international in character.

ALLEN SCREW.

Screw having a hexagonal hole or socket in the head.

ALLEN WRENCH.

Wrench, consisting essentially of a hexagonal rod, used to turn an allen screw.

ALLIGATOR CLIP.

Long, narrow spring clip with meshing jaws;

primarily used with test leads for temporary connections.

ALLOCATED CHANNELS.

AIRCOM complex channel assigned to a specific user.

ALLOCATED-USE CIRCUIT.

Circuit in which one or more channels have been allocated for the exclusive use of one or more services by a proprietary service; it may be unilateral or joint circuit.

ALLOCHROMATIC.

Term used to characterize crystals which have photoconductivity because of dispersed microscopic or submicroscopic particles occurring naturally or as a result of exposure to certain radiations.

ALLOTROPHY.

Existence of more than one form of an element due to differences in the arrangement of atoms or molecules.

ALLOTTER.

Distributor, associated with the finder control group relay assembly, which allots an idle linefinder in preparation for an additional call.

ALLOTTER RELAY.

Relay of the linefinder circuit whose function is to preallot an idle linefinder to the next incoming call from the line, and to guard relays.

ALLOWANCE.

Copies of a publication authorized in the allowance tables for automatic distribution to a command or activity.

ALLOY.

Mixture or combination of two or more metals.

ALLMAJCOM.

General message originated by Headquarters, USAF, addressed to all major air force commands.

ALMAR.

General message originated by the commandant, Marine Corps, as the equivalent of ALNAV, NAVOP, but applying to Marine Corps only.

ALMATS.

General message originated by Commander, Military Air Transport Service, to Military Air Transport Service subordinate units.

ALNAV.

General message originated by the Secretary of the Navy, normally concerning the functions of the naval establishment, including Marine Corps.

ALNAVSTA.

General message originated by the Secretary of the Navy, similar to ALNAV in content, which requires wide dissemination to shore establishments of the Navy and Marine Corps, including shore based elements of the operating forces.

ALNEAC.

General message originated by Commander, Northeast Air Command, to subordinate units.

ALNICO.

Alloy consisting chiefly of aluminum, nickel, and cobalt, with high retentivity; it is used to make small, powerful permanent magnets.

ALO (AIR LIAISON OFFICER).

Experienced pilot who is familiar with operational procedures and the capabilities and limitations of air power. An air liaison officer is provided for each corps, and division headquarters furnished tactical air support. The air liaison officer is responsible for technical assistance to the ground staff in formulating requirements for air support and provides continuous guidance on air matters. He is a direct representative of the tactical air force commander.

ALPACFLT.

General message originated by the Commander-in-Chief, United States Pacific Fleet.

ALPHA.

Greek letter α . Often used to designate angles, or quantities.

ALPHA, BETA, GAMMA-FORM OR STAGE.

Terms used to distinguish the different modifications of an element; for example, these stages

of iron depend upon its temperature, and only the alpha iron is highly magnetic.

ALPHA, BETA, GAMMA-LINES.

Lines of a spectral series, arranged in the order of increasing frequency.

ALPHA PARTICLE.

Positively charged particle ejected by many radioactive substances; actually the nucleus of a helium atom.

ALPHA QUARTZ.

Name given to the low-temperature modification of silica.

ALPHA RAYS.

Rays of alpha particles emitted from certain types of radioactive elements. They are slightly deflected by a magnetic field and are powerful ionizers.

ALPHA-RAY SPECTRUM.

Separation of alpha particles of different speeds, usually by a magnetic field, but in some cases by both magnetic and electric fields.

ALPHABET FLAGS.

Flags used on an international basis in visual communications to represent the letters of the alphabet.

ALPHABET STRIP.

Strip containing one mixed alphabet, repeated.

ALRAD.

General message originated by Commander, Air Research and Development Command, to subordinate units.

ALSTACON.

General message originated by the Secretary of the Navy, containing administrative information requiring wide dissemination to all stations within the ConUS.

ALSTAOUT.

General message originated by the Secretary of the Navy, containing administrative information

requiring wide dissemination to all stations outside the ConUS.

ALSTAT.

General message originated by the Director of Statistical Services, Headquarters, USAF, to all major air force commands.

ALSTATCON.

General message originated by the Director of Statistical services, Headquarters, USAF, to all major air force commands in the ConUS.

ALTERNATE AIRPORT.

Airport specified in a flight plan, to which a flight may proceed when a landing at the intended point becomes inadvisable.

ALTERNATE CHANNEL.

Channel, two channels above or below the reference channel.

ALTERNATE FREQUENCY.

Frequency assigned for use at a certain time, or for a certain purpose, to replace or supplement the frequency normally used.

ALTERNATING CURRENT.

1. Term applied to electronic equipment indicating it is capable of operation from an ac power source only.
2. Current that is continually changing in magnitude and reversing in polarity.

ALTERNATING CURRENT GENERATOR.

1. Rotating electrical machine, generally known as an alternator, that converts mechanical power into alternating current.
2. Vacuum-tube oscillator, or any other device, designed for the purpose of producing alternating current.

ALTERNATING CURRENT PLATE RESISTANCE.

Internal resistance of a tube to the flow of alternating current. It is the ratio of a small change in plate voltage to the resulting change in plate current, with other voltages constant, expressed in ohms.

ALTERNATING CURRENT PULSE.

Alternating current wave of brief duration.

ALTERNATING CURRENT RECEIVER.

Radio receiver designed to operate only from an ac source.

ALTERNATING CURRENT RESISTANCE.

1. Internal resistance to the flow of alternating current between the cathode and plate of a tube. It is equal to a small change in plate voltage divided by the corresponding change in plate current, and is expressed in ohms.
2. Total resistance offered by a device in an ac circuit.

ALTERNATING CURRENT/DIRECT CURRENT.

Term applied to electronic equipment indicating it is capable of operation from either an ac or dc primary power source.

ALTERNATING CURRENT/DIRECT CURRENT RECEIVER.

Radio receiver usually consisting of a few tubes and small power consumption, designed to operate directly from either an ac or dc source.

ALTERNATING CURRENT/DIRECT CURRENT RINGING.

Method of telephone ringing which utilizes ac and dc components; alternating current to operate a ringer, direct current to aid the action of a relay which stops the ringing when the called party answers.

ALTERNATING GRID VOLTAGE.

Ac component of grid voltage.

ALTERNATING OR AC (ALTERNATING CURRENT) COMPONENT OF CURRENT.

That portion of a pulsating current represented by the changing rate and/or direction of electron flow; that is, in the absence of the dc component, the average electron displacement is zero.

ALTERNATING OR AC (ALTERNATING CURRENT) COMPONENT OF VOLTAGE.

That portion of a pulsating voltage which is responsible for the non-uniform electron flow in a conductor to which the pulsating voltage is applied; if the pulsating voltage reverses its

polarity, the ac component is responsible for the reversals of the direction of electron flow as well as for the changes in the rate of flow.

ALTERNATING QUANTITY.

Periodic quantity, the average value of which is zero over a complete cycle.

ALTERNATING VOLTAGE.

Voltage developed across a resistance or impedance through which alternating current is flowing. This voltage is continually varying in value and reversing its polarity at regular intervals.

ALTERNATION.

Variation, either positive or negative, of a wave form from zero to maximum and back to zero (equals one-half of a cycle).

COLOR PHASE. Periodic changing of color phase of one or more components of the color television subcarrier between two sets of assigned values.

ALTERNATIVE FREQUENCY.

Frequency or group of frequencies which may be assigned for use on channel, or on a particular channel, at a certain time or for a certain purpose to replace or supplement the frequencies normally used on that channel.

ALTERNATIVES, UK (UNITED KINGDOM) JOINT.

Two or more cipher or code symbols which have the same plain language equivalent.

ALTERNATOR.

Rotating machine which generates alternating current. (Reference: ALTERNATING CURRENT GENERATOR.)

ALTERNATOR TRANSMITTER.

Radio transmitter which utilizes power generated by a radio-frequency alternator.

ALTIMETER.

Instrument that indicates the elevation of an aircraft with respect to a specific reference level. The reference level may be sea level or the terrain beneath the aircraft.

ALTIMETER STATION.

Radio-navigation mobile station in the aeronautical radio-navigation service, the emissions of which are intended to determine the altitude of aircraft aboard which the altimeter station is located above the earth's surface.

ALTITUDE.

True height above sea level; the indicated altitude corrected for air temperature and barometric pressure.

ALTITUDE DELAY.

Synchronization delay introduced between the time of transmission of the radar pulse and the start of the trace on the indicator, for the purpose of eliminating the altitude hole on the PPI-type display.

ALUMINUM.

Lightweight silvery white metal used extensively in radio for plates of capacitors, housings, and shielding purposes.

ALUMINUM BASE.

Aluminum disk on which a lacquer or other coating is applied in some types of recording disks.

ALUMINUM FOIL.

Radio reflector which returns a relatively strong radar echo in proportion to its size. Its effectiveness is increased when the strips are cut to one-half the radar's wave length.

ALUTS (ALEUTIAN ISLANDS).

Chain of islands southwest of Alaska.

ALZICOM.

General message originated by Headquarters, USAF, addressed to major air force commands within the ConUS.

AM (AMPLITUDE MODULATION).

1. Process of superimposing intelligence on a radio-frequency carrier so that the audio-frequency variations are superimposed upon the amplitude of the high-frequency wave.

2. Method of modulating a carrier wave to cause it to vary in amplitude corresponding to the amplitude of the original signal.

AMA (AIR MATERIEL AREA).

1. One of the several areas set up by the Air Materiel Command for expediting Air Force maintenance and the supply of Air Force organizations and installations within those areas.
2. Organization that operates any one of these areas under the Air Materiel Command, comparable in echelon to a numbered air force.

AMA (AUTOMATIC MESSAGE ACCOUNTING) SYSTEM.

Arrangement of apparatus for recording and processing on continuous tapes the data required for computing telephone charges on certain classes of calls. The system may include provision for compiling all charges and credits which affect the customer's bill and for automatic printing of the bill.

AMAS (AMERICAN MILITARY ASSISTANCE STAFF).

AMATEUR.

Person who operates and experiments with transmitters, receivers, or other electronic equipment as a hobby and not for profit.

AMATEUR BANDS.

Bands of frequencies assigned exclusively to radio amateurs.

AMATEUR OPERATOR.

Person holding a license, issued by the FCC authorizing that person to operate an amateur radio station.

AMATEUR PORTABLE STATION.

Amateur station that may conveniently be moved about from place to place, but is not operated while in motion.

AMATEUR PORTABLE-MOBILE STATION.

Amateur station that may be conveniently transferred to or from a mobile unit and is ordinarily used while such mobile unit is in motion.

AMATEUR RADIO COMMUNICATION.

Radio communication between amateur stations solely with a personal aim and without pecuniary interest.

AMATEUR SERVICE.

Service of self training, intercommunication, and technical investigations carried on by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim, and without pecuniary interest.

AMATEUR STATION.

1. Radio station owned and operated by an amateur for personal two-way communication with other amateurs, and licensed accordingly by the FCC or by corresponding authorities in other countries.
2. Station in the amateur service.

AMATEUR STATION CALL LETTERS.

Group of letters and numbers assigned to a licensed amateur for identification purposes. United States amateur calls begin with W or K, followed by a location-indicating numeral and two or more additional letters.

AMB (AIRWAYS MODERNIZATION BOARD).

Board established for the development on a long-range, full-scale research and development program designed to alleviate the nation's serious air-traffic problems.

AMBER.

Yellowish or reddish-brown translucent fossil resin having excellent insulating qualities.

AMBIENT.

Encompassing on all sides. Ambient temperature means average or mean surrounding temperature; ambient noise level means average or mean surrounding noise level.

AMBIENT NOISE.

Acoustic noise existing in a room or other location; magnitudes are usually measured with a sound level meter.

AMBIENT TEMPERATURE.

Temperature of the surrounding medium, such as gas or liquid.

AMBIGUITY.

In navigation, the condition which is obtained when navigation coordinates define more than

one point, direction, line of position, or surface of position.

AMC (AIR MATERIEL COMMAND).

Major air command of the Air Force that provides logistic support to the United States Air Force.

AMD (AIR MOVEMENT DATA).

Flight plan data used in reckoning aircraft movement. The data may be presented in either a situation or digital display.

Correlated Air-Movement Data: Air-movement data which has been associated with a track.

Uncorrelated Air-Movement Data: Air-movement data which has not been associated with a track.

AMERICAN MORSE CODE.

System of dot and dash signals, invented by Samuel F.B. Morse, now used to a limited extent for wire telegraphy in North America. It differs considerably from the International Morse code used in radio, having a different spacing method and some entirely different letter codes.

AMERICAN RADIO RELAY LEAGUE.

Publisher of the monthly magazine QST and is the largest amateur radio organization in the world.

AMERICIUM.

Element 95. Made synthetically from uranium and plutonium by bombarding U238 and PU239 with 40,000,000 electron volt helium ions.

AMES (AIR MINISTRY EXPERIMENTAL STATION).

British ground radar station in an early-warning system.

AMG (ALLIED MILITARY GOVERNMENT OF OCCUPIED TERRITORY).**AMIK (AMERICAN MISSION IN KOREA).****AMIS (AIR MOVEMENTS INFORMATION SECTION).**

Unit of the civil aeronautics administration which

provides flight-plan information to the identification branch of a direction center. Such information pertains to friendly airborne objects which are, or will be, operating in the organization's area.

AMMETER.

Instrument used for measuring the amount of current in amperes.

AMMO (AMMUNITION).

1. Generic term for certain composite objects or substances used up or expended, or intended to be used up or expended, in the process of inflicting damage upon the enemy or practice target.

2. Cartridge or shell ammunition for guns, as distinguished from bombs, mines, grenades, etc.

AMO (AIRCRAFT MATERIEL OFFICER).**AMORPHOUS.**

Devoid of regular structure, especially of crystalline structure.

AMP (AMPERE).

Practical unit of current. One ampere will flow through a resistance of one ohm when a difference of potential of one volt is applied across terminals.

AMP-HR (AMPERE-HOUR).

Unit quantity of electricity equal to a current of one ampere flowing for one hour. Multiplying current in amperes by the time of flow in hours gives the AMP-HR. This rating is used chiefly to indicate the amount of energy that a storage battery can deliver before it needs recharging or that a primary battery can deliver before it needs replacing.

AMPERAGE.

Amount of an electric current in amperes.

AMPERE-HOUR.

Quantity of electricity that passes through a circuit in one hour when the rate of flow is one ampere.

AMPERE-HOUR CAPACITY.

Number of ampere-hours that can be delivered

by a storage battery or other battery under specified conditions.

AMPERE-HOUR METER.

Meter that registers in ampere-hours the quantity of electricity consumed.

AMPERE-TURNS.

Product obtained by multiplying the number of turns in a coil by the current in amperes flowing through the coil.

AMPERE'S LAW.

Magnetic intensity at any point near a current-carrying conductor can be computed on the assumption that each infinitesimal length of the conductor produces, at the point, an infinitesimal magnetic density. The resulting magnetic intensity, at the point, is the vector sum of the contributions of all the elements of the conductor.

AMPH (AMPHIBIAN).

Aircraft designed to take off and land on either water or land.

AMPHIBIOUS COMMAND SHIP.

Naval vessel from which a commander exercises control in amphibious operations. It is designed primarily to fulfill communication requirements for control of surface, sub-surface, and air units engaged in the landing and supporting of landing forces. It provides planning and supporting facilities such as aerological, photographic, and map reproduction equipment.

AMPLIDYNE.

Special type dc generator, used as a power amplifier, in which the response of the output voltage to changes in field excitation is very rapid; used extensively in servo systems.

AMPLIFICATION.

Increase of magnitude in transmission from one point to another. It may be expressed as a ratio or, by extension of the term, in decibels.

CURRENT. Ratio of output to input currents of an amplifier or transducer input circuit.

POWER. Process of amplifying a signal to produce a gain in power, as distinguished from voltage amplification.

VOLTAGE. Ratio of the signal voltage across a specific load impedance of a transducer, to the signal voltage across the transducer input.

AMPLIFICATION FACTOR.

Ratio of a small change in plate voltage to the small change in control-electrode (grid) voltage required to produce the same change in plate current, with all other electrode voltages and currents constant. It is a measure of the effectiveness of the control-electrode voltage with respect to that of the plate voltage in controlling the plate current.

AMPLIFIED BACK BIAS.

Degenerative voltage developed across a fast time constant circuit within a stage of an amplifier and fed back into a preceding stage.

AMPLIFIER.

Device employing electron tubes or the controlled flow of electrons in solid materials (the transistor) for increasing current or voltage. In a radio receiver, this results in louder sound. In the electron tube form, amplification is achieved by using the incoming signal to control a larger amount of power supplied by a battery or other local power source.

BALANCED. Amplifier circuit in which there are two identical signal branches connected so as to operate with the inputs in phase opposition and with output connections each balanced to ground.

BUFFER. Amplifier designed to isolate a proceeding circuit from the effects of a following or preceding circuit.

CLASS A. Amplifier in which the grid bias and alternating grid voltages are such that plate current flows at all times.

CLASS AB. Amplifier in which the grid bias and alternating grid voltages are such that plate current flows for appreciably more than half but less than the entire electrical cycle.

CLASS B. Amplifier in which the grid bias is approximately equal to the cutoff value so that the plate current is approximately zero when no exciting grid voltage is applied, and

so that plate current flows for approximately one-half of each cycle when an alternating grid voltage is applied.

CLASS C. Amplifier in which the grid bias is appreciably greater than the cutoff value so that the plate current in each tube is zero when no alternating grid voltage is applied, and so that plate current flows for appreciably less than one-half of each cycle when an alternating grid voltage is applied.

DIFFERENTIAL. Amplifier having two similar input circuits connected so as to respond to the difference between two voltages or currents and effectively suppress voltages or currents which are alike in the two input circuits.

DIRECT-CURRENT. Amplifier capable of amplifying direct voltages. It generally employs between stages either resistive coupling alone or resistive coupling combined with other forms of coupling.

LINE. Amplifier, common to all channels in one direction, used to compensate for line loss. Normally associated directly with the line.

MAGNETIC. Device using one or more saturable reactors, either alone or in combination with other circuit elements, to secure power gain.

MODULATED. Amplifier stage of a transmitter, in which the radio-frequency carrier is electrically varied or modulated in accordance with another signal such as voice, tone, or visual signals.

MONITORING. 1. Amplifier which absorbs a negligible amount of energy from a circuit for monitoring or measuring purposes.

2. Device which, when connected across a circuit, absorbs a negligible amount of energy, but reproduces that energy so it can be heard in a receiver or measured.

OVERDRIVEN. Amplifier stage which is designed to distort the input signal waveform

by permitting the grid signal to drive the stage beyond cutoff and/or into plate current saturation.

POWER. Amplifier designed to produce a gain in signal power, as distinguished from a voltage amplifier.

SINGLE-ENDED. Amplifier in which each stage normally employs one tube or, if more than one tube is used, they are connected in parallel so that operation is asymmetric with respect to ground.

TUNED RADIO FREQUENCY. Tuned amplifier, using resonant-circuit coupling, designed to operate at radio frequencies.

VOLTAGE. Amplifier designed primarily to increase the voltage of a signal.

AMPLITUDE.

1. Maximum displacement from the zero position of an alternating current or any other periodic phenomenon.

2. Amplitude is commonly used, in a general sense, to indicate the size or magnitude of a wave or current.

PEAK. Value of the maximum amplitude, voltage or current of a wave.

PULSE. Maximum instantaneous value of a pulse.

Note. Spikes and ripples superimposed on the pulse are commonly considered to be separate transients, and are ignored in considering the dimensions of the pulse itself.

AMPLITUDE BALANCE.

1. Device for adjusting the operating limits of a differential gain control.

2. Control for balancing the amplitude of signals on separate traces.

AMPLITUDE DISTORTION.

Changing of a wave shape in amplitude so that it is no longer proportional to its original amplitude. This occurs in an amplifier or other device when the amplitude of the output is not

exactly a linear function of the input amplitude.

AMPLITUDE FADING.

Fading in which the amplitudes of all frequency components of a modulated carrier wave are uniformly attenuated.

AMPLITUDE LIMITER.

Circuit or stage that automatically reduces the amplification for signal peaks exceeding a predetermined value.

AMPLITUDE MODULATION.

1. Process of superimposing intelligence on a radio-frequency carrier so that the audio-frequency variations are superimposed upon the amplitude of the high-frequency wave.
2. Method of modulating a carrier wave to cause it to vary in amplitude corresponding to the amplitude of the original signal.

AMPLITUDE MODULATION NOISE.

Noise produced by undesired amplitude variations or a radio-frequency signal.

AMPLITUDE NOISE.

Effect, on radar accuracy, of the fluctuations in the amplitude of the signal returned by the target. These fluctuations are caused by any change in aspect if the target is not a point source.

AMPLITUDE RESONANCE.

Resonance in which any frequency produces a decrease in the amplitude of the oscillation of the system.

AMPLITUDE SEPARATOR.

Television receiver circuit that separates the control impulses from the video signal.

AMPLITUDE SUPPRESSION RATIO.

Ratio, in frequency modulation, of the undesired output to the desired output of an FM receiver when the applied signal has simultaneous amplitude modulation and frequency modulation. This ratio is generally measured with an applied signal that is amplitude modulated 30 percent at a 400 cycle rate and is frequency modulated 30 percent of maximum system deviation at a 1000 cycle rate.

AMPLITUDE-FREQUENCY RESPONSE CHARACTERISTICS.

Transmission gain or loss of a device or system as compared to variations in frequency.

AMPLITUDE-MODULATED TRANSMITTER.

Radio transmitter sending out a constant frequency signal varying in amplitude.

AMPLITUDE-MODULATED WAVE.

Constant frequency wave form varying in amplitude in accordance with the frequency of an impressed signal.

AMPOULE, CARBON MONOXIDE DETECTOR.

Thin glass vial which, when broken, releases a liquid which changes color in the presence of carbon monoxide.

AMPLR (AMPLIFIER).

Device employing electron tubes or the controlled flow of electrons in solid materials (the transistor) for increasing current or voltage. In a radio receiver, this results in louder sound. In the electronic tube form, amplification is achieved by using the incoming signal to control a larger amount of power supplied by a battery or other local power source. (Reference: CURRENT AMPLIFIER, POWER AMPLIFIER AND VOLTAGE AMPLIFIER.)

ANAGLYPH.

Picture, printed or projected in complementary colors, combining the two images of a stereoscopic pair, which gives a stereoscopic image when viewed through spectacles having filters of corresponding complementary colors.

ANALOG.

Physical system, used in electronic computers, on which the performance of measurements yields information concerning a class of mathematical problems.

ANALOG COMPUTER.

Physical system, used in electronic computers, together with means of control for the performance of measurements (upon the system) which

yields information concerning a class of mathematical problems.

ANALYZER.

Name given to the second nicol in a polariscope, which in a sense, analyzes the light from the polarizing nicol and intervening crystal section.

ANASTIGMAT.

Compound lens corrected for astigmatism.

ANASTIGMATIC.

Free from astigmatism. Usually refers to compound photographic lenses where the astigmatism of one lens is nullified by the opposite astigmatism of the other.

ANASTIGMATIC LENS.

Lens corrected for astigmatism and curvature of field.

ANCHOR.

1. Fastening arranged to prevent movement. For example, a guy wire is fastened to an anchor in the earth.
2. Expansion shield which may be used with a screw or bolt to attach equipment to a concrete or tile surface.

EXPANDING. Earth-fastening device with expanding blades.

LOG. Anchor made of a log, split log, or two split logs crossed.

SCREW-IN. Spiral or screw-shaped anchor.

ANCR (AIRCRAFT NOT COMBAT READY).**AND-CIRCUIT.**

Synonym for AND-GATE in an electronic computer.

AND-GATE.

1. Gate, in an electronic computer, whose output is energized when every input is in its prescribed state.
2. Electronic circuit, used in astronautics, whose output is energized only when every input is energized.

ANDB (AIR NAVIGATION DEVELOPMENT BOARD).

Board, reporting to the Department of Commerce through the Civil Aeronautics Administration, which was organized to develop a nationwide air-navigation system to serve the needs of civil aviation and tactical military aviation, and capable of effective integration into any air-defense system established by the Department of Defense. This board was disbanded in 1958.

ANEMOGRAM.

Record traces by a self-registering anemometer.

ANEMOMETER.

Instrument for measuring the force or speed of the wind.

ANEMOSCOPE.

Instrument for indicating the existence of wind and showing its direction.

ANEROID BAROMETER.

Barometer, the operation of which depends upon changes in the shape of an evacuated, hollow, corrugated metal container caused by changes in air pressure.

ANEROIDOGRAPH.

Aneroid barometer with a mechanism for recording automatically and continuously the atmospheric pressure.

ANFE (AIRCRAFT NOT FULLY EQUIPPED).**ANG (AIR NATIONAL GUARD).**

Military force, comprising those units and personnel organized and partially maintained by the several states, territories, or District of Columbia, for which certain federal responsibility is vested in the Department of the Air Force, and which, while in the service of the United States, constitutes a component of the United States Air Force.

ANGLE.

An angle is formed when two straight lines meet. The lines are called the sides of the angle, and the intersection is called the vertex. An acute angle is less than 90° , a right angle is 90° , and an obtuse angle is greater than 90° .

BREWSTER. Angle of incidence at which a vertically polarized wave (a wave polarized in the plane of incidence) undergoes a phase shift of 90° on reflection from the surface.

CRAB. Angle through which an aircraft is turned into the wind in an attempt to correct for drift. If this angle eliminates the drift and the aircraft thus makes good its desired course, then the crab angle is also the drift correction angle.

DRIFT. Horizontal angle between the longitudinal axis of an aircraft and its path relative to the ground.

DRIFT CORRECTION. Angular difference between the desired course and the heading.

REFERENCE. Angle formed between the center line of a radar beam as it strikes a reflecting surface and the perpendicular drawn to that reflecting surface.

SLOPE. Direction of a flight path expressed as an angle projected in the vertical plane.

STATION. Angle formed between lines drawn from the target to each of two shore ground stations.

ANGLE COMPONENT SOLVER.

Machine which resolves an electrical vector into its components.

ANGLE MODULATION.

Modulation in which the angular velocity of a sine wave carrier is the characteristic subject to variation. Phase and frequency modulation are particular forms of angle modulation.

ANGLE NOISE.

Tracking error introduced into radar by variations in the apparent angle of arrival of the echo from a target due to finite target size. This effect is caused by variations in the phase front of the radiation from a multiple point target as the target changes its aspect with respect to the observer.

ANGLE OF ARRIVAL.

Angle made between the surface of the earth

and the line of propagation of a radio wave arriving at a receiving antenna.

ANGLE OF AZIMUTH.

Angle measured clockwise in a horizontal plane, usually from the north. The north used may be true north, Y-north, or magnetic north.

ANGLE OF BEAM.

Angle which incloses the greater part of the energy transmitted from a directional antenna system.

ANGLE OF CONVERGENCE.

Angle formed by the lines of sight of both eyes in focusing on any line, corner, surface, or part of an object.

ANGLE OF DEPARTURE.

Angle of the line of propagation of a radio wave with respect to a horizontal plane at the transmitting antenna.

ANGLE OF DEPRESSION.

Angle measured at the observer between the horizontal plane and a point below that plane.

ANGLE OF DEVIATION.

Angle through which a ray of light is bent by a refracting surface; the angle between the subtended path of an incident ray and the refracted ray.

ANGLE OF ELEVATION.

Angle measured at the observer between the horizontal plane and a point above that plane.

ANGLE OF GROOVE.

Angle from wall to wall of an unmodulated groove in a radial plane perpendicular to the surface of a recording disk.

ANGLE OF INCIDENCE.

Angle between the perpendicular to a reflecting surface at the point at which an electro-magnetic wave strikes a surface and the direction from which the wave approaches the surface. A wave perpendicular to a surface has a zero angle of incidence.

ANGLE OF LAG.

Angle by which one alternating electrical quantity lags another of the same cyclic period.

ANGLE OF LEAD.

1. Time by which one alternating electrical quantity leads another of the same cyclic period. It is measured as angular velocity and referred to as the angle of lead.
2. Angle through which the commutator brushes of a generator or motor must be moved from the normal position to prevent sparking.

ANGLE OF RADIATION.

Angle between the surface of the earth and the center of the beam of energy radiated upward into the sky from a transmitting antenna.

ANGLE OF REFRACTION.

1. Angle between the perpendicular to a surface separating two different media (at the point at which an electro-magnetic wave passes from the first medium to the second) and the direction which the wave takes in the second medium.
2. Angle measured between a wave, ray, or beam refracted from a surface and the perpendicular to the surface.

ANGLE OF SITE.

Vertical angle between the horizontal and the line of site (line from gun to target).

ANGLE TRACKING NOISE.

Any deviation of the tracking axis from the center of reflectivity of a target. It is the resultant of servo noise, receiver noise, angle noise, and amplitude noise.

ANGSTROM UNIT.

Unit of measurement of the wave length of light and other radiation, equal to one ten-millionth millimeter, which is 10^{-8} centimeter.

ANGULAR CALIBRATION CONSTANTS.

Interior orientation, in a multiple lens camera, of the plate perpendiculars of the several lens-camera units to a common origin of direction.

ANGULAR DISTANCE.

Distance expressed in radians or equivalent angular measure. It is equal to 2 radians or 360° , multiplied by the distance in wave lengths.

ANGULAR FREQUENCY.

Frequency expressed in radians per unit of time. (Reference: RADIAN FREQUENCY.)

ANGULAR LENGTH.

Length expressed in radians or equivalent angular measure equal to 2 radians or 360° , multiplied by the length in wave lengths.

ANGULAR PARALLAX.

(Reference: PARALLAX.)

ANGULAR PARALLAX DIFFERENCE.

(Reference: PARALLAX.)

ANGULAR PHASE DIFFERENCE.

Angular phase difference between two periodic quantities which have the same period is 2 radians (360°) times the phase difference in cycles.

ANGULAR RATE.

Rate of change of bearing.

ANGULAR VELOCITY.

Rate of change of angle. The angular velocity of a periodic quantity, expressed in radians per second is the frequency multiplied by two. If the periodic quantity can be considered as resulting from the uniform rotation of a vector, the angular velocity is the number of radians per second passed over by the rotating vector.

ANGUS PEN RECORDER.

Instrument designed to aid in traffic studies by recording permanently the actual amount of time a channel is being utilized for traffic, its maximum capability is 20 channel coverage.

ANISTROPIC.

Exhibiting different properties when tested along axes in different directions.

ANL (AUTOMATIC NOISE LIMITER).

Vacuum tube circuit that automatically cuts off all noise peaks that are stronger than the highest peak in the desired signal being received, thereby preventing loud crashing noises due to strong atmospheric or manmade interference.

ANNEALING.

Heating of metal or alloy followed by slow cool-

ing, generally resulting in a lowering of tensile strength with a corresponding improvement in ductility.

ANNEX.

Addition to a basic publication, which becomes an integral part of the publication in which entered.

ANNOUNCEMENT SYSTEM.

General arrangement for supplying information by means of periodic announcements distributed to the various locations over one-way distribution circuits. It is used for time of day, weather, etc.

ANNULAR.

Ring-shaped.

ANNUNCIATOR.

Visual signaling device, operated by relays, which indicates conditions of associated circuits.

ANODE.

1. Positive electrode; the plate of a vacuum tube; the positive pole of a tube toward which the electrons move.
2. Positive electrode of an electro-chemical device (such as a primary or secondary electric cell) toward which the negative ions are drawn.

MAGNESIUM. Bar of magnesium, buried in the earth, connected to an underground cable to prevent cable corrosion due to electrolysis. Forms a battery and keeps the sheath potential positive. Used in areas where electrolytic action deteriorates the cable sheaths.

ANODE BALANCING COIL.

Set of mutually coupled windings used to maintain approximately equal currents in anodes operating in parallel from the same transformer terminal.

ANODE CURRENT.

Current flowing in the anode (plate) circuit.

ANODE POWER SUPPLY.

Means for supplying power to the plate electrode of a vacuum tube at a properly regulated voltage; usually positive with respect to the cathode.

ANODE VOLTAGE.

Voltage between the anode and the cathode.

ANODE-RAY CURRENT.

Current in a varified gas made up of the movement of positively charged particles, which have their origin in the anode and are of atomic dimensions.

ANODIZE.

To place a protective film on a metal object by electrolytic action.

ANOIN.

One of the negative ions that moves toward the anode in a discharge tube, electrolytic cell, or similar apparatus.

ANOMALOUS PROPAGATION.

Type of radio wave propagation in which radiated rays are bent excessively by refraction in the lower layers of the atmosphere. This bending creates an effect much as if a duct or waveguide had been found in the atmosphere. The duct, which may be either elevated or ground based, is able to guide part of the radiated energy over distances far beyond the normal range. (Reference: ABNORMAL PROPAGATION, TRAPPING.)

ANOMALY.

Difference between the mean of any meteorological element, or phase of that element, over a given time at a particular place, and the mean of the same element or phase over the same time for all other points on the same parallel of latitude.

ANS (ANSWER).

Transmission made by the station called in response to the call received.

ANSWER LAMP.

Telephone switchboard lamp which lights when an answer cord is plugged into a line jack; goes out when the called telephone answers, and lights when the call is completed.

ANSWERING PLUG AND CORD.

Plug and cord, in telephone communication,

used to answer a calling line.

ANT. (ANTENNA).

ANTENNA.

Anything that projects out to pick up sound or electric vibrations; specifically that part of a radar or of a radio-sending or radio-receiving set that projects into the air and contains, or itself consists of, that apparatus that radiates waves or receives them.

ADCOCK. Pair of vertical antennas separated by a distance of one-half wave length or less, and connected in phase opposition to produce a directional pattern having the shape of a figure eight.

ALL-WAVE. Receiving antenna that responds to a wide range of frequencies.

ARTIFICIAL. Device which simulates a real antenna in its essential impedance characteristics and has the necessary power handling capabilities, but does not radiate or receive radio waves.

BASE-LOADED. Vertical antenna, having an inductance in series at the base for loading the antenna to secure a desired electrical length.

BEAM. Antenna that concentrates its radiation into a narrow beam in a definite direction.

BEVERAGE. Directional antenna consisting of a very long wire, supported a few feet (up to 15) above the ground, running horizontally in the direction of the arrival of the incoming waves.

BICONICAL. Antenna formed by two conical conductors having a common axis and vertex, excited at the vertex. When the vertex angle of one of the cones is 180° , the antenna is called a discone.

BIDIRECTIONAL. Antenna having two directions of maximum response.

CHEESE. Cylindrical parabolic reflector enclosed by two plates, perpendicular to the cylinder, so spaced as to permit the propagation of more than one mode in the desired

direction of polarization.

COAXIAL. Antenna comprised of a quarter-wavelength extension to the inner conductor of a coaxial line and a quarter-wave-length radiating sleeve which closely surrounds the outer conductor of the coaxial line, but is connected to the outer conductor only at its end.

CORNER-REFLECTOR. Antenna consisting of a primary radiating element and dihedral corner reflector.

COSECANT-SQUARED. Shaped-beam antenna in which the radiation intensity over a part of its pattern in some specified plane (usually the vertical) is proportional to the square of the cosecant of the angle measured from a specified direction in that plane (usually the horizontal). Its purpose is to lay down a uniform field along a line which is parallel to the specified direction, but which does not pass through the antenna.

DIELECTRIC. Antenna which employs dielectric as the major component in producing the required radiation.

DIPOLE. Straight radiator, usually fed in the center, and producing a maximum of radiation in the plane normal to its axis.

DIRECTIONAL. Antenna which radiates or receives radio waves more effectively in some directions than others. The term is usually applied to antennas whose directivity is larger than that of half-wave dipole.

DOUBLET. Antenna consisting of two elevated conductors substantially in the same straight line and of substantially equal length, with the power delivered at the center.

FANNED-BEAM. Unidirectional antenna so designed that transverse cross-sections of the major lobe are approximately elliptical.

FISHBONE. Antenna consisting of a series of coplanar elements arranged in colinear pairs, loosely coupled to a balanced transmission line.

- FOLDED DIPOLE.** Primary radiating element consisting of two parallel dipoles, separated by a small fraction of the wave length, connected together at their outer ends, and fed at the center of one dipole.
- HERTZ.** Antenna system which does not depend, for its operation, upon the presence of ground. Its resonant frequency depends upon its distributed capacitance and inductance, which are determined by its physical length. (Reference: MARCONI ANTENNA.)
- HORN.** Antenna having the shape of a tube whose cross-sectional area increases toward the open end, and through which radio waves pass.
- IMAGE.** Imaginary counterpart of an actual antenna, assumed for mathematical purposes to be located below the surface of the ground, and symmetrical with the actual antenna above ground.
- ISOTROPIC.** Hypothetical antenna radiating or receiving equally in all directions. In the case of electro-magnetic waves, isotropic antennas do not exist physically but represent convenient reference antennas for expressing directional properties of actual antennas.
- J.** Antenna having a configuration resembling a J, comprising a half-wave antenna end-fed by a parallel wire quarter-wave section.
- LONG WIRE.** Linear antenna which, by virtue of its considerable length in comparison with the operating wavelength, provides a directional pattern.
- LOOP.** Antenna consisting of one or more complete turns of conductor, designed for directional transmission or reception.
- MARCONI.** Antenna system of which the ground is an essential part, as distinguished from a Hertz antenna.
- MULTIPLE-TUNED.** Antenna with connections to ground or counterpoise through turning reactances at more than one point.
- MUSA.** Multiple-unit steerable antenna consisting of a number of stationary antennas, the composite major lobe of which is electrically steerable.
- OMNIDIRECTIONAL.** Antenna having an essentially nondirectional pattern in azimuth and a directional pattern in elevation.
- PARABOLIC.** Antenna with a radiating element and a parabolic reflector that concentrates the radiated power into a beam.
- PENCIL-BEAM.** Unidirectional antenna so designed that cross-sections of the major lobe, by planes perpendicular to the direction of maximum radiation, are approximately circular.
- PILL-BOX.** Cylindrical parabolic reflector enclosed by two plates perpendicular to the cylinder so spaced as to permit the propagation of only one mode in the desired direction of polarization. It is fed on the focal line.
- RECEIVING.** Device for converting received space propagated electro-magnetic energy to electrical energy.
- RHOMBIC.** Directional antenna composed of long wire radiators comprising the sides of a rhombus, the two halves of the rhombus being fed equally in opposite phase at an apex. The antenna is usually terminated in an impedance.
- SECTIONAL VERTICAL.** Vertical antenna in which the continuity is broken at one or more points by the insertion of reactances or driving voltages.
- SERIES-FED VERTICAL.** Vertical antenna which is insulated from ground and energized at the base.
- SHAPED BEAM.** Antenna with a directional pattern of which over a certain angular range, is of a special shape for some particular use.
- SHUNT-FED VERTICAL.** Vertical antenna connected to the ground at the base and energized at a point suitably positioned above the ground point.

SLEEVE-DIPOLE. Dipole antenna surrounded in its central portion by a coaxial sleeve.

SLEEVE STUB. Antenna consisting of one-half of a sleeve-dipole antenna projecting from an extended conducting surface.

SLOT. Radiating element formed by a slot in a conducting surface.

STEERABLE. Directional antenna whose major lobe can be readily shifted in direction.

TOP-LOADED VERTICAL. Vertical antenna so constructed that because of its greater size at the top there results modified current distribution giving a more desirable radiation pattern in the vertical plane.

TRANSMITTING. Device for converting electrical energy to electro-magnetic radiation capable of propagating through space.

TURNSTILE. Antenna composed of two dipole antennas normal to each other with their axes intersecting at their mid-points. Usually the currents are equal and in phase quadrature.

UNIDIRECTIONAL. Antenna that has a single well-defined direction of maximum radiation intensity.

V. V-shaped arrangement of conductors, the two branches of the V being fed equally in opposite phase at the apex.

WAVE. Directional antenna composed of a system of parallel, horizontal conductors from one-half to several wave lengths long, and terminated to ground at the far end in its characteristic impedance.

YAGI. Type of directional antenna array usually consisting of one driven one-half wave-length dipole section, one parasitically excited reflector and several parasitically excited directors.

ANTENNA ADAPTER.

Device that permits the use of any wall outlet for the antenna and ground connections of a radio receiver. It ordinarily provides connections through capacitors to the power-line wires.

ANTENNA ARRAY.

Arrangement of antenna elements, usually dipoles, which results in desirable directional characteristics.

ANTENNA ASSEMBLY.

Complete equipment associated with projecting and receiving radar waves into space. It consists, in general, of a mounting base, gears, and motors for rotating the antenna, synchros, potentiometers, and antenna proper. A reflector, together with associated switches such as those used in sector scanning, are used to set up a ship's head marker on the PPI scope.

ANTENNA BEARING.

Bearing of the antenna delivered to the indicator of PPI.

ANTENNA COIL.

Coil in a radio receiver through which antenna current flows.

ANTENNA COINCIDENCE.

That instance when two rotating highly directional antennas are pointed toward each other.

ANTENNA CONTROL.

Control governing rotation, direction, speed, servo, slaving, etc., of an antenna.

ANTENNA COUPLER.

1. RF transformer used to connect an antenna to a transmission line or to connect a transmission line to a radio receiver.
2. RF transformer, link circuit, or tuned line used to transfer RF energy from the final plate tank circuit of a transmitter to the transmission line feeding the antenna.

ANTENNA CURRENT.

RF current that flows in an antenna.

ANTENNA DETECTOR.

Device consisting of an antenna and electronic equipment to warn aircraft crew members of their being observed by radar sets. These units are usually located in the nose or tail of the aircraft and illuminate a light on one or more panels when radar signals are detected.

ANTENNA DISCONNECT SWITCH.

Safety switch or interlock plug used to remove driving power from the antenna to prevent rotation while work is being performed on it.

ANTENNA EFFECT.

Spurious effect, in a loop antenna, resulting from the capacitance of the loop to ground.

ANTENNA ELIMINATOR.

Device that permits the use of any wall outlet for the antenna and ground connections of a radio receiver. It ordinarily provides connections through capacitors to the power-line wires.

ANTENNA FIELD GAIN.

FCC television standards figure of merit for the effectiveness of a transmitting antenna. It is a measure of the effective free space field intensity, measured in the horizontal plane, produced by a transmitting antenna at a distance of one mile with an antenna input power of one kilowatt.

ANTENNA GAIN.

1. Ratio of the maximum radiation intensity of the antenna in question to the maximum radiation intensity from a reference antenna with the same power input.
2. Gain of an antenna referred to an isotropic radiator can be measured by measuring the intensity of the radiated field on the principal axis and at a known distance from the antenna. Knowing the power delivered to the antenna, the field intensity that would have existed with an isotropic radiator is easily calculated.
3. Effectiveness of a directional antenna in a particular direction as compared with a standard dipole antenna. It is usually expressed as the ratio of the standard antenna power to the directional antenna power that will produce the same field strength in the desired direction.

ANTENNA GROUND SYSTEM.

That portion of an antenna closely associated with and including an extensive conducting surface which may be the earth itself.

ANTENNA HEIGHT ABOVE AVERAGE TERRAIN.

Average of the antenna heights above the terrain from two to ten miles from the antenna. In general, a different antenna height will be determined by each direction from the antenna. The average of these various heights is considered as the antenna height above average terrain.

ANTENNA MATCHING.

Process of adjusting impedances so that the impedance of an antenna equals the characteristic impedance of its transmission line.

ANTENNA MATCHING DEVICE.

Passive network which matches an antenna to its transmission line by adding the proper impedance to the impedance of the antenna at the point of feed to make it appear equal to the characteristic impedance of the line.

ANTENNA PATTERN TYPE.

Name applied to the configuration of a plot of received signal amplitude versus azimuth when plotted on polar coordinates.

ANTENNA PEDESTAL.

Support for an antenna assembly containing training motor, gears, synchros, rotating joint, etc.

ANTENNA POWER.

Square of the antenna current of a transmitter multiplied by the antenna resistance at the point where the current is measured.

ANTENNA REFLECTOR.

That portion of a directional antenna array which reduces the field intensity behind the array and increases it in the forward direction.

ANTENNA RESISTANCE.

Quotient of the power supplied to the entire antenna circuit by the square of the effective antenna current referred to at a specified point.

ANTENNA SWITCH.

Switch used for connecting the antenna into the circuit.

ANTENNA SWITCHING UNIT.

Unit which switches the receiver out of the

antenna circuit at the time a pulse is transmitted by the transmitter. (Reference: TR (TRANSMIT-RECEIVE) BOX.)

ANTENNA SYSTEM.

Assembly of the antenna and the electrical and mechanical devices for supporting, insulating, and/or rotating it.

ANTENNA TILT ERROR.

Angular difference between the antenna tilt angle shown on the mechanical indicator, and the electrical center of the radar beam.

ANTITRANSMIT RECEIVE BOX.

Device similar to a transmit-receive box used to tune the transmitter section of the radio frequency line so that returning echoes do not enter the transmitter.

ANTITRANSMIT RECEIVE SWITCH.

Automatic device employed in a radar for substantially preventing received energy from being absorbed in the transmitter.

ANTIAIRCRAFT ARTILLERY.

Term applied to ground weapons and material used to locate, illuminate, fire on, and destroy enemy aircraft.

ANTIAIRCRAFT ARTILLERY INTELLIGENCE SERVICE.

System of observers and communication facilities established by anti-aircraft artillery units to gather and transmit information of aerial activities necessary for the proper employment of anti-aircraft artillery.

ANTIAIRCRAFT ARTILLERY OPERATIONS CENTER.

Anti-aircraft artillery installation established for the control of AAA guns, automatic weapons, etc.

ANTIAIRCRAFT DIRECTOR.

Army officer, assigned to duty in a direction center, responsible for coordinating anti-aircraft action against specified airborne objects.

ANTIAIRCRAFT FIRE CONTROL RADAR.

Equipment used for precision fire direction and

control of anti-aircraft artillery.

ANTIAIRCRAFT OFFICER.

Army anti-aircraft representative, on the battle staff, who advises on employment and capabilities of anti-aircraft weapons.

ANTIAIRCRAFT TECHNICIAN.

Army enlisted man who assists the anti-aircraft director.

ANTICAPACITANCE SWITCH.

Switch designed to have minimum capacitance between its terminals.

ANTICATHODE.

Target of the X-ray tube, on which the stream of electrons from the cathode is focused and from which X-rays are emitted.

ANTICLUTTER GAIN CONTROL.

Device which automatically and smoothly increases the gain of a radar receiver from a low level to the maximum, within a specified period after each transmitter pulse, so that short range clutter producing echoes are amplified less than long range echoes.

ANTIHALATION COATING.

Light-absorbing coating applied to the back side of the support of a film or plate, or between the emulsion and the support to suppress halation.

ANTI HUNT.

Feed-back signal or network in a servo-mechanism acting to prevent hunting or oscillation of the system. Special types of antihunt circuits are: anticipator, derivative, velocity feedback, and damper.

ANTI JAMMING

1. Art of minimizing the effect of enemy electronic countermeasures to permit echoes from targets detected by radar to be visible on the indicator.
2. Controls or circuit features incorporated to minimize jamming.

ANTI LOGARITHM.

Number corresponding to a given logarithm.

For example: If the logarithm of 563.2 is 2.75066, then 563.2 is the antilogarithm of 2.75066.

ANTIMICROPHONIC.

Device specifically designed to prevent microphonics.

ANTINODES.

Points, lines, or surfaces of a stationary-wave system which have a maximum amplitude.

ANTINOISE MICROPHONE.

Microphone with characteristics such that it discriminates against acoustic noise.

ANTIRESONANT CIRCUIT.

Parallel-resonant circuit.

ANTIRESONANT FREQUENCY.

Frequency, of a crystal unit, for a particular mode of vibration at which, neglecting dissipation, the effective impedance of the crystal unit is infinite.

ANTISIDETONE.

Arrangement of telephone set circuit element so that only a small amount of the power generated in a transmitter reaches the associated receiver.

ANTISIDETONE CIRCUIT.

Circuit, included in telephone sets, which has a balancing network that reduces sidetone.

ANTISIDETONE TELEPHONE SET.

Telephone set having an antisidetone circuit.

ANTISUBMARINE.

1. Of equipment, mines or missiles: Designed to attack or destroy submarines.
2. Of actions: Directed against submarines.
3. Of units or organizations: Set up to search out and attack submarines.

ANTRAC.

Term associated with radio equipment derived from the JAN nomenclature AN/TRC-() with an A added for easier pronunciation. It is applied to the AN/TRC-1, 8, and 24 series of radio equipment. (Reference: VOLSCAN.)

AOCP (AIRCRAFT OUT OF COMMISSION FOR PARTS).

AP (AIR-POSITION INDICATOR).

Airborne computing system which presents a continuous indication of aircraft position on the basis of aircraft heading, airspeed, and elapsed time.

APERIODIC.

1. Having no rhythm or repetitive characteristics, or no tendency to vibrate. A circuit that will not resonate in the tuning range is often called aperiodic.

2. Condition of a radio circuit not tuned or responsive to any particular frequency.

APERIODIC ANTENNAS.

Antennas designed to have constant impedance over a wide range of frequencies due to the suppression of reflections within the antenna system; they include terminated wave and rhombic antennas.

APERIODIC DAMPING.

Condition of a system when the amount of damping is so large that, when the system is subjected to a single disturbance, either constant or instantaneous, the system comes to a position of rest without passing through that position. While an aperiodically damped system is not strictly an oscillating system, it has such properties that it would become an oscillating system if the damping were sufficiently reduced.

APERTURE.

1. That portion of a plane surface, in a unidirectional antenna, near the antenna that is perpendicular to the direction of maximum radiation through which the major part of the radiation passes.

2. The hole or window in an opaque disc (aperture plate) which is placed between the copy being scanned and the light-sensitive element or phototube. The image of the copy being scanned is usually focused on the aperture plate, and the size of the hole determines the elemental area scanned by the phototube.

APEX OR APEX FACE.

Term applied to denote the inclined, terminating, rhombohedral faces of quartz.

APG (AIR PROVING GROUND).

Air Force installation operated at Eglin Air Force Base by the Air Proving Ground Command.

APGC (AIR PROVING GROUND COMMAND).

Major air command in the USAF organized primarily to determine the operational suitability of materiel by test and evaluation.

APHELION.

Point at which a planet or comet, in orbit, is farthest from the sun.

API (AIR-POSITION INDICATOR).

Dead-reckoning computer which integrates headings and speeds to give a continuous indication of position with respect to the air mass in which the vehicle is moving.

APOGEE.

Point at which a satellite is farthest from the earth, or its planet.

APP (APPENDIX).

1. Tube on a balloon used for inflation and deflation.
2. Attachment to the main text of a document. (Reference: TAB.)

APPARATUS.

Electrical equipment units, either separately or collectively.

APPARENT FIELD OF VIEW.

Apparent angular size of the field of view as it appears to the eye or the area in which the virtual image is formed; it is equal to the magnifying power of the instrument times the angle of the true field of view.

APPARENT HORIZON.

Apparent junction of earth and sky as seen from any specific position on or above the earth.

APPARENT POWER.

The product of the effective current, at the two

points of entry of a single phase, two wire circuit, in one conductor multiplied by the effective potential difference at the two points of entry.

APPARENT SAG AT ANY POINT.

Departure of the wire at the particular point in the span from a straight line between the two points of support.

APPARENT SAG OF WIRE IN A SPAN.

Maximum departure of the wire in a given span from the straight line between the two points of support of the span. Where the two supports are at the same level, this is the normal sag.

APPENDIX.

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APPLEGATE DIAGRAM.

Diagram illustrating the behavior of the electrons in a velocity-modulation tube by showing the positions of electrons along the drift space plotted as vertical coordinates against time along the horizontal axis.

APPLETON LAYER.

Region of highly ionized air in the ionosphere, capable of reflecting or refracting radio waves, under certain conditions, back to earth. It is made up of the F1 and F2 layers; these being above the E1 and E2 layers that make up the kennelly-heaviside layer.

APPLICATION SCHEMATIC DIAGRAM.

Pictorial representation in which symbols and lines are used to illustrate the interrelation of a number of circuits.

APPLIQUE.

Circuit element connected upon a basic circuit without changing the circuit characteristics.

APPLIQUE CIRCUIT.

Special circuit which is provided to modify existing equipment in order to allow for special usage. For instance, some carrier telephone

equipment designed for ringdown manual operation can be modified through the use of an applique circuit to allow for use between points having dial equipment.

APPROACH CLEARANCE.

Clearance issued to the pilot of an aircraft making a flight subject to instrument flight rules authorizing an approach for landing by such aircraft.

APPROACH CONTROL.

Service established for the purpose of control in IFR flights arriving at, departing from, and operating in, the vicinity of airports, by means of direct and instantaneous communication between approach-control personnel and all aircraft operating under their control.

APPROACH CONTROL SERVICE.

Air traffic control service for arriving or departing IFR flights.

APPROACH SCHEDULE.

Schedule prepared by the transport commander, in an amphibious operation, in coordination with the battalion landing team commander. It contains the movement of each scheduled wave of the boat group from the rendezvous area to the line of departure and thence to the assigned beach so that the landing of each wave will be made at the prescribed time.

APPROACH SEQUENCE.

Order in which two or more aircraft are cleared for approach.

APPROPRIATE AERONAUTICAL FACILITY.

Normal communications facility with which flight plans or position reports are filed.

APPROPRIATION.

Authorization by an act of Congress to make payment, for specified purposes within a prescribed amount out of the Treasury.

APPROVED BILL OF MATERIAL.

Engineered bill of material that has been edited and approved by an engineering review activity.

APPROVED CIRCUITS.

Circuit designated by appropriate command in accordance with the joint policy as stated in Article 2424, JANAP 122. The highest classification of information that may be transmitted, in clear, over an approved circuit is dependent upon the classification rating given that circuit. No electrical circuit will be approved for transmission in the clear of any information having a classification of Top Secret.

AQUADAG.

Colloidal suspension of graphite deposited on the inner side walls of cathode-ray tubes to serve as an electrostatic shield or an accelerating anode.

AR.

ITU designation for amateur (radio) station or Army.

ARBITRARY CONSTANT.

Constant to which various values may be assigned by decision alone, with these values being unaffected by any of the variables in an equation.

ARC.

1. Luminous glow formed by the flow of electric current through ionized air, gas, or vapor between separated electrodes, or contacts.
2. Portion of the circumference of a circle.

ARC CONVERTER.

Form of oscillator utilizing an electric arc as the generator of alternating or pulsating current.

ARC FURNACE.

Electrothermic apparatus in which heat energy is produced by electric current through one or more arcs internal to the furnace.

ARC LAMP.

Electric lamp in which the light is produced by an arc made when a current flows through ionized gas between two electrodes.

ARC TRANSMITTER.

Radio transmitter employing an electric arc in the generation of RF oscillations.

ARCBACK.

Sudden failure of rectifier action in a mercury-vapor rectifier tube due to an internal fault. Sometimes caused by excessive density of mercury vapor resulting from overheating of the cathode. (Reference: BACKFIRE.)

ARCING.

Production of an arc, as at the brushes of a motor or the contacts of a switch.

ARCING CONTACTS.

Special contacts on which the arc is drawn after the main contacts of a switch or circuit breaker have opened.

ARCING TIME.

1. Interval between the parting, in a switch or circuit breaker, of the arcing contacts and the extension of the arc.
2. Time elapsing, in a fuse, from the severance of the fuse link to the final interruption of the circuit under the specified condition.

ARDC (AIR RESEARCH AND DEVELOPMENT COMMAND).

Major air command in the USAF that carries out the research and development activities required for the accomplishment of Air Force missions.

AREA.

1. Surface of anything; the measure of its extent.
2. Extent or space on the earth.
3. Scope or extent of something intangible, as the area of responsibility, or the area of study, or the area of power.

AIR DEFENSE. 1. Specifically defined area within which identification of airborne objects is not required if the flights originated in the area, except during periods of air defense emergency.

2. Specifically defined and established territory that includes objectives of possible enemy air attack and for which air defense must be provided.

AIRSPACE WARNING. Same as danger area but located more than three miles beyond the United States coast line.

BASE RATE. Area within the exchange in which all types of services are given without mileage charges.

CENTRAL OFFICE. Area which receives telephone service from a central office.

EXCHANGES. Areas set up for administrative reasons for telephone service covered by a single rate basis. Usually a single city or large division of town or village.

LIGHT LOADING. Territory in which the loading caused by sleet, ice, or wind does not exceed eight pounds per square foot.

MAINTENANCE. Territory set up for repair and replacement work.

OPERATING. Separation of most of the telephone company's work into a large geographical unit. An area functions as a complete telephone company up to the executive level.

TESTING. Defined territory assigned to one force for trouble locations and routing maintenance tests.

AREA AIR DEFENSE CONTROL CENTER.

Principal air operations installation from which all aircraft, antiaircraft artillery, ground-to-air guided missiles, and air warning functions of an active air defense area are coordinated.

AREA BOMBING.

Bombing a target of a general area rather than a small or pinpoint target.

AREA CLUTTER GATE.

Classified definition. (Reference: AFM 100-50.)

AREA COMMAND.

Command which is composed of organized elements of one or more of the armed services, designated to operate in a specific geographical area, which are placed under a single commander.

AREA CONTROL CENTER.

Center established to provide air traffic control

service to IFR flights.

AREA CONTROL SERVICE.

Air traffic control service for IFR flights in control areas.

AREA MOVING TARGET INDICATOR.

Classified definition. (Reference: AFM 100-50.)

ArFCoS (ARMED FORCES COURIER SERVICE).

ARGON.

Colorless, odorless inert gas found in air. When ionized in a vacuum tube, argon gives off a bright red, blue, or purplish glow.

ARGUMENT.

1. One of the independent variables upon which the value of a function depends.
2. Angle that fixes the direction of a complex number.
3. Angle between a vector and its reference axis.

ARINC (AERONAUTICAL RADIO, INCORPORATED).

Commercial communications company formed and owned substantially by the scheduled airlines of the United States. It is the licensee of all domestic airlines enroute communication stations. In addition, it furnishes extensive service to international aircraft operations on overseas and foreign routes. The company provides both air/ground and point-to-point service. It coordinates with industry, government, and manufacturers on the standardization of electronic equipment and represents the aviation industry in RTCA and ICAO on electronic matters.

ARITHMETIC MEAN.

Average of a number of quantities, obtained by adding the quantities and dividing the result by the number of quantities involved.

ARITHMETIC UNIT.

Part used in an electronic computer which performs arithmetic operations.

ARM (ARMATURE).

1. Originally the rotating part of an electrical

machine, but in the case of a generator having a rotating field, the stationary part is the armature.

2. Piece of ferromagnetic material so positioned with respect to a magnetic field that motion is possible.

ARM.

1. Combat branch of a military force or unit.
2. Weapons of war.
3. Furnish a man or troops with weapons.
4. Equip or load an airplane or other vehicle with guns, bombs, rockets, or the like.
5. Make a bomb, torpedo or mine ready for detonation by removal of the safety pin from the fuzes.
6. Prepare a nation for war by producing weapons, training troops, etc.

CABLE EXTENSION. Short arm securing one cable designed to bring another cable in line to throw it out of line to clear an obstruction.

CROSS. Horizontal member, usually of wood, attached to a pole or other vertical member, supporting lines, or cables.

EXTENSION. Cross arm added vertically to the top of a pole for greater height.

GUARD. 1. Cross arm placed across and in line with a cable to prevent damage to the cable.

2. Cross arm located over wires to prevent foreign wires from falling into them.

ARMAMENT CONTROL SYSTEM.

System of search and gun-aiming radars which provides the solution to the fire control problem in an aircraft by determining for the pilot the proper course required to intercept a given target. The search radar is used to locate targets at long range. When target is within 4000 yards, target data is supplied to a computer and solution to firing problem is presented to pilot on an oscilloscope.

ARMAMENT SYSTEMS OFFICER.

USAF officer who manages armament systems maintenance activities including bomb-navigation, fire control, turret systems, and related simulated training devices and test equipment, and commands armament units.

ARMATURE.

1. Rotating part of an electrical machine, except in the case of a generator having a rotating field, in which the armature is stationary.
2. Piece of ferromagnetic material so positioned with respect to a magnetic field that motion is possible.

ARMATURE CORE.

Assembly of laminations forming the magnetic circuit of the armature.

ARMATURE REACTION.

Interaction between the magnetic flux of the armature and that of the field in an electric motor or generator, causing a redistribution of flux that must be taken into account during design. The interaction results from the electromotive force that the armature current produces in the magnetic circuits of the motor or generator.

ARMATURE-VOLTAGE CONTROL.

Controlling the speed of a motor by changing the voltage applied to its armature windings.

ARMED FORCES RADIO SERVICE.

Radio service, including maintenance, programs, transcriptions, etc., available to armed forces overseas and to certain service and veteran hospitals in the United States.

ARMED SERVICES ELECTRO-STANDARDS AGENCY.

Joint service organization which prepares and promulgates standard joint specifications for the electronic parts and materials used in the communications and electronics equipments of the Armed Forces.

ARMISH (UNITED STATES MILITARY MISSION WITH THE IRANIAN ARMY).**ARMOR.**

Layer or more of extra strength material, in cable construction, such as steel wire or tape to reinforce the usual lead wall.

ARMOR CLAMP.

Fitting for gripping the armor of a cable at the point where the armor terminates or where the cable enters a junction box.

ARMORED CABLE.

Cable provided with a wrapping of metal, primarily for the purpose of mechanical protection.

ARMSTRONG OSCILLATOR.

Inductive feed-back oscillator, that consists of a tuned grid circuit and untuned tickler coil in the plate circuit. Control of feed back is accomplished by varying the coupling between the tickler and the grid circuit.

ARMY.

1. Land military forces of a nation.
2. Unit of US Army made up of two or more army corps.
3. Short for US Army.

ARMY AIR DEFENSE COMMAND POST.

Army installation used for collection, display, and evaluation of air-surveillance information which is used in the assignment of specific batteries against enemy airborne objects.

ARMY COMMAND AND ADMINISTRATIVE NETWORK.

Domestic and overseas integrated system of fixed radio, wire, cable, and associated facilities providing command and administrative communications for the Army. Comparable to the AIRCOM for the Air Force.

ARMY FIELD FORCES.

1. Ground forces operating in the field.
2. Units, general headquarters, installations, and equipment that comprise the forces in a theater of operation.

ARMY GROUP.

Several field armies (primarily a tactical command) under a designated commander.

ARMY SECURITY AGENCY.

Organization, reporting to the Director of Intelligence, U. S. Army, which directs military communications security and intelligence operations within the U. S. Army in accordance with the policies and procedures established by the national security agency.

ARMY WITH AIR FORCE.

Army personnel assigned and/or attached as individuals or units for duty with the Air Force. Term ARWAF (pronounced as a word) is used to designate this condition.

ARNOLD ENGINEERING DEVELOPMENT CENTER.

Air Force engineering development center located at Tullahoma, Tennessee. Named after general of the Air Force Henry H. Arnold.

ARO (AIRCRAFT RANGE ONLY).

AROTC (AIR RESERVE OFFICER TRAINING CORPS).

Training corps under the control of the USAF, with detachments in colleges and universities, to prepare cadets for service in one of the components of the USAF.

ARR (ARRIVAL).

Action or event of an aircraft arriving at a place; an instance of such action, as in the case of an aircraft timetable showing six arrivals and four departures.

ARRAY.

Combination of antennas with suitable spacing and with all elements excited so as to make the radiated fields from the individual elements add in the desired direction.

ANTENNA. Arrangement of antenna elements, usually dipoles, which results in desirable directional characteristics.

AERIAL. Antenna arrangement.

BINOMIAL. Directional antenna array for reducing minor lobes and providing maximum response in two opposite directions.

BROADSIDE. Antenna array in which the direction of maximum radiation is perpendicular to the line or plane of the array.

COLLINEAR. Antenna array having a string of halfwave elements excited in phase.

END-FIRE. Antenna array whose direction of maximum radiation is along the axis of the array.

LINEAR. Antenna array whose elements are spaced along a straight line.

PINE-TREE. Array of dipole antennas aligned in a vertical plane known as the radiating curtain, behind which, is a parallel array of dipole antennas forming a reflecting curtain.

ARRESTOR.

1. Protective device used to provide a bypass path directly to ground for lightning discharges that strike an antenna or other conductor.

2. Power-line device that is capable of reducing the voltage of a surge applied to its terminals, interrupting current if present, and restoring itself to original operating conditions.

3. Device which diverts high voltages away from protected equipment to ground.

ARRIVAL.

Action or event of an aircraft arriving at a place; an instance of such action, as in the case of an aircraft timetable showing six arrivals and four departures.

ARRL (AMERICAN RADIO RELAY LEAGUE).

Publisher of the monthly magazine QST and is the largest amateur radio organization in the world.

ARS (AIR RESCUE SERVICE).

Air Force organization under the Military Air Transport Service that provides air rescue, including search for both civilian and military aircraft in remote areas, either on land or sea.

ART. (ARTICLE).

1. Distinct portion of any writing consisting of

two or more particulars, or treating of various topics.

2. Distinct detail or particular, as of news or conduct.

3. Thing of particular class or kind; a commodity.

ARTCC (AIR ROUTE TRAFFIC CONTROL CENTER).

Civil Aeronautics Administration facility that establishes and monitors routes and altitudes for aircraft flying within a given control area.

ARTICULATION.

Percentage, in a telephone transmission system, of the total number of speech units transmitted over the system which are correctly understood by the listener.

ARTICULATION AND INTELLIGIBILITY.

Percent articulation or percent intelligibility of a communication system is the percentage of the speech units spoken by a talker or talkers that is understood correctly by a listener or listeners. The word articulation is customarily used when the contextual relations among the units of the speech material are thought to play an unimportant role; the word intelligibility is customarily used when the context is thought to play an important role in determining the listeners perception. It is important to specify the type of speech material and the units into which it is analyzed for the purpose of computing the percentage. The units may be fundamental speech sounds, syllables, words, sentences, etc.

ARTIFICIAL ANTENNA.

Device which simulates a real antenna in its essential impedance characteristics and has the necessary power handling capabilities, but does not radiate or receive radio waves. (Reference: DUMMY ANTENNA.)

ARTIFICIAL LINE.

Circuit made up of lumped constants, which is used to simulate various characteristics of a transmission line.

ARTIFICIAL LINE DUCT.

Balancing network simulating the impedance of the real line and distant terminal apparatus, which is employed in a duplex circuit for the purpose of making the receiving device unresponsive to outgoing signal currents.

ARTIFICIAL LOAD.

Dissipative, but essentially nonradiating device having the impedance characteristics of an antenna, transmission line, or other practical utilization circuits. (Reference: DUMMY LOAD.)

ARTIFICIAL RADIOACTIVITY.

Radioactivity produced artificially by radio elements.

ARTIFICIAL VOICE.

Small loudspeaker mounted in a shaped baffle which is proportioned to simulate the acoustical constants of the human head; used for calibrating and testing close-talking microphones.

ARW (AIR RAID WARNING).

Information concerning approaching enemy aircraft and/or guided missiles, which is disseminated primarily for passive air defense purposes. (Reference: AIR RAID WARNING CONDITIONS.)

ARWAF (ARMY WITH AIR FORCE).

Army personnel assigned and/or attached as individuals or units for duty with the Air Force. Pronounced as a word, and used attributively as in ARWAF officer or ARWAF unit.

AS (ANTISUBMARINE).

1. Of equipment, mines or missiles: Designed to attack or destroy submarines.
2. Of actions: Directed against submarines.
3. Of units or organizations: Set up to search out and attack submarines.

ASBESTOS.

Nonflammable fibrous mineral used in electronics for heat-insulating and fireproofing purposes, as in a line cord resistor.

ASC (AUTOMATIC SENSITIVITY CONTROL).

Circuit used for automatically maintaining receiver sensitivity at a predetermined level.

Similar to automatic gain control, but it affects the receiver constantly rather than during the brief interval selected by the range gate.

ASD (AVIATION SUPPLY DEPOT).

ASDE (AIR SURFACE DETECTION EQUIPMENT).

Short-distance radar having resolution and discrimination. It provides, in graphic or pictorial form, for use by traffic control personnel: (a) plan position indication of the airport surface with the location of runways, taxiways, and ranges clearly defined, and (b) presentation of all aircraft, vehicular, and other traffic, both moving or stationary.

ASDIC.

British term for listening devices used on vessels for submarine-detecting purposes. (Reference: SONAR.)

ASESA (ARMED SERVICES ELECTRO-STANDARDS AGENCY).

Joint service organization which prepares and promulgates standard joint specifications for the electronic parts and materials used in the communications and electronics equipment of the Armed Forces.

ASG (AERONAUTICAL STANDARDS GROUP).

Air Force-Navy group concerned with establishing joint aeronautical standards.

ASG (ASSIGNED).

Designating personnel, units, equipment, missions, etc., that have been assigned in one sense or another.

ASH CAN.

Depth charge.

ASM (AIR-TO-SURFACE MISSILE).

Missile designed to be dropped from aircraft, which upon release, is guided to a surface target, such as an airfield, by means of an internal homing device or radio control.

ASO (AIR SURVEILLANCE OFFICER).

Officer responsible for the performance of the air-surveillance functions.

ASPB (ARMED SERVICES PETROLEUM BOARD).

ASPECT RATIO.

Ratio of width to height, as in a television frame.

ASPEN.

Airborne component of the OBOE navigational system. The nomenclature is AN/APA-9. It consists essentially of a 10-CM airborne radar beacon which is interrogated by two ground radar stations and directed by them. With a different receiver the set is known as ASPEX. British designations include Album Leaf with Pepperbox receiver and Fountain Pen with Penwiper receiver.

ASPHERICAL LENS.

Lens in which the surfaces depart from a true spherical shape.

ASPR (ARMED SERVICES PROCUREMENT REGULATION).

ASR (AIRPORT SURVEILLANCE RADAR).

Radar located on or near an airport to provide an indication of the bearing and distance of each aircraft within the terminal area in which the airport is located. It is employed to vector and give navigational guidance to arriving and departing aircraft in the control of air traffic within the terminal area; it does not provide data regarding the elevation of aircraft.

ASSEMBLY.

1. Combination of parts and/or subassemblies which may be taken apart without destruction and which does not have an application or use of its own, but is essential for the completeness of a more complex item with which it is combined. Assemblies may be referred to as subassemblies, and sub-sub assemblies, to indicate their relationship to a major assembly.

2. Complete operating unit.

ASSIGNABLE CAUSE.

Assignable causes are any causes which can be found to account for a quality control reading that falls outside the control limits. There are four major categories of assignable causes: computational errors, radar performance, weather, and operator performance.

ASSIGNED.

Designating personnel, units, equipment, missions, etc., that have been assigned in one sense or another.

ASSIGNED FREQUENCY.

Frequency coinciding with the center of the frequency band in which the station is authorized to operate.

ASSIGNER.

One who assigns plant interconnections.

ASSIST TAKE-OFF.

Action of an aircraft taking off with an added boost from a rocket or other device.

ASSISTANT.

Person who helps or assists another. Used in certain titles, as an assistant for programming.

ASSOC (ASSOCIATED REQUISITION).

Priority requisition submitted for any material, other than aircraft components covered by AOCP or ANFE requests, the lack of which indirectly affects the performance or mission of an aircraft.

ASSOCIATED REQUISITION.

Priority requisition submitted for any material, other than aircraft components covered by AOCP or ANFE requests, the lack of which indirectly affects the performance or mission of an aircraft.

ASST (ASSISTANT).

Person who helps or assists another. Used in certain titles as an assistant for programming.

ASSUMPTION.

A supposition on the current situation, or a pre-supposition on the future course of events, either or both assumed to be true in the absence of positive proof, necessary to enable the commander, in the process of planning, to complete his estimate of the situation and make a decision on his course of action.

AST (AIR SURVEILLANCE TECHNICIAN).

Noncommissioned officer who assists the air surveillance officer.

ASTATIC.

1. Without any particular orientation; having no directional characteristics.

2. Being in neutral equilibrium; having no tendency toward any change of position.

ASTATIC GALVANOMETER.

Sensitive galvanometer consisting of two very small magnetized needles arranged parallel to each other with north and south poles adjacent and suspended inside the galvanometer coil.

ASTEROIDS.

Many small planets revolving around the sun, largely between Mars and Jupiter.

ASTIA (ASSISTANT SERVICES TECHNICAL INFORMATION AGENCY).**ASTIGMATISM.**

Type of spherical aberration in which rays from a single point of an object do not converge in the image. Astigmatism in a lens or mirror causes a blurred image.

ASTIGMATIZER.

Cylindrical lens which may be rotated into the line of sight of a range finder to cause the effect of astigmatism.

ASTROGATION.

Navigation by the stars while in space.

ASTRONAUTICS.

Science of space flight.

ASTRONOMIC STATION.

Point on the earth at which observations are made on heavenly bodies to determine latitude, longitude, or azimuth.

ASTROPHYSICS.

Physics of astronomical bodies and regions. Deals with the physical constitution of heavenly bodies.

ASV (AIR-TO-SURFACE VESSEL).

Search radar sets used in aircraft for detecting objects on the surface of the sea.

ASW (ANTISUBMARINE WARFARE).**ASYMMETRICAL.**

Not symmetrical.

ASYMMETRICAL CELL.

Cell, such as a photoelectric cell, in which the

impedance to the flow of current in one direction is greater than in the other direction.

ASYMPTOTIC.

Having or pertaining to the characteristics of an asymptote, which is a line representing the limiting position that the tangent of a curve approaches as the point of contact recedes. In electricity, asymptotic breakdown voltage is a voltage, if applied over a long period of time, that will break down a cable.

ASYNCHRONOUS.

Not synchronous.

ASYNCHRONOUS MACHINE.

Machine in which the speed of operation is not proportional to the frequency of the system to which it is connected.

ASYNCHRONOUS SPARK GAP.

Rotary spark gap without provision for sparking at definite points in the cycle of the ac supply.

AT BAR.

Crystal bar cut from X sections with its long direction making an angle with Z equal to the complement of the AT angle (or $90^\circ - 35^\circ 15' = 54^\circ 45'$).

AT-CUT CRYSTAL.

Oscillator plate of specified dimensions and with an edge parallel to X and the angle Z to $Z' = +35^\circ 15'$.

AT&T (AMERICAN TELEPHONE AND TELEGRAPH COMPANY).

ATAG (AIR TRAINING ADVISORY GROUP).

ATAK (ATTACK).

Act of offense or act of striking at a physical object with the purpose of inflicting injury, damage, or destruction.

ATC (AIR TRAFFIC CONTROL).

Service operated by appropriate authority to promote safe, orderly, expeditious flow of air traffic. The service is administered by air route traffic control centers and airport traffic control towers.

ATCC (AIR TRAFFIC CONTROL CENTER).

Principal communications and operations center

from which all aircraft are controlled under IFR conditions in the vicinity of an airdrome. The complete system consists of a suitable long-range radar installation capable of observing aircraft along airways, a method of controlling inboard and outboard traffic within the traffic pattern of the airdrome, and a precision radar unit capable of providing the pilot of an aircraft with information that will permit a safe landing.

ATCOM (ATOLL COMMANDER).

ATF (ATCUAL TIME OF FALL).

ATHERMANOUS.

Opaque, to infrared. Not transmitting radiant heat.

ATLAS.

Surface-to-surface intercontinental strategic ballistic missile being developed for the Air Force. It is powered by rocket engines and uses multi-stage construction to achieve the extreme speeds and altitudes required for its range. It will be capable of carrying a nuclear warhead. Maximum altitude may exceed 500 miles. The nomenclature is SM-65.

ATM (ATMOSPHERE).

1. Whole mass of air surrounding the earth.
2. Any gaseous medium.
3. Unit of pressure defined as the pressure of 76 CM of mercury at 0° Centigrade under standard gravity, which is approximately 15 pounds per square-inch.

ATMOSPHERE.

1. Whole mass of air surrounding the earth.
2. Any gaseous medium.
3. Unit of pressure, defined as the pressure of 76 CM of mercury at 0° C (32° F), under standard gravity, which is approximately 15 pounds per square inch.

EXPLOSIVE. Refers to a condition where the air is mixed with dust, metal particles, or inflammable gas in such proportion that it may ignite or explode.

STANDARD. Condition of the atmosphere in which the temperature and moisture content of the air decrease uniformly with height. In the standard atmosphere, the air temperature decreases with increasing altitude from 59°F. (15°C.) at sea level at the rate of 6.5°C. per kilometer (18.8° F. per mile). Although this condition is postulated by standard, it is not necessarily normal at any particular location. The atmosphere is likely to be of standard composition when strong, gusty winds are blowing, because the turbulence created prevents both stratification of the air and establishment of nonstandard temperature and humidity gradients.

ATMOSPHERIC ABSORPTION.

Loss of energy in transmission of radio waves due to dissipation in the atmosphere.

ATOMIC BOMB.

Bomb that releases a large amount of energy contained in the nucleus of an atom by splitting the nucleus apart.

ATOMIC ENERGY COMMISSION.

Civilian governmental agency established by the Atomic Energy Act of 1946 to take over the organization and property of the Manhattan Project and to supervise and control the production of nuclear-fissionable, radioactive materials in the United States.

ATOMIC NUMBER.

Number representing the position of a given element in the scale of all elements arranged in order of their atomic complexity. This number is supposed also to represent the nuclear charge of the atom, or number of protons in the nucleus, and hence the number of orbital electrons.

ATOMIC THEORY.

Generally accepted theory, concerning the structure and composition of substances and compounds, that everything is composed of various combinations of atoms.

ATMOSPHERIC DUCT.

An almost horizontal layer in the troposphere in which the downward curvature of a radio ray exceeds the curvature of the earth. If the wave length is sufficiently short compared to the thickness of the layer, the pressure of the layer may cause appreciable reduction in the attenuation of radio waves propagated between antenna in or near the layer.

ATMOSPHERIC NOISE.

Noise or static due to natural causes, such as thunderstorm activity.

ATMOSPHERIC PRESSURE.

Pressure of the atmosphere measured from absolute zero pressure. At sea level, atmospheric pressure is about 14.7 pounds per square inch, decreasing as the altitude increases.

ATMOSPHERIC RADIO WAVE.

Radio wave that is propagated by reflection in the atmosphere. It may include either the ionospheric wave or the tropospheric wave, or both.

ATMOSPHERICS.

1. Electrical disturbances, in the atmosphere, such as lightning, which causes noise that interferes with intelligible radio communication.
2. Static.
3. Unwanted, extraneous, disturbing currents induced in wire-line circuits which result from dust, lightning, and snow storms.

ATO (AIR TACTICS OFFICER).

Officer responsible for forming hostile tracks into raids, interceptors tracks into groups, and also responsible for forwarding summarized data on raids and groups to a supervisory organization.

ATO (ASSIST TAKE-OFF).

Action of an aircraft taking off with an added boost from a rocket or other device.

ATOM.

Smallest particle into which matter can be divided

ATOMIC WEIGHT.

Relative weight of an atom, based on an atomic weight of 16 for the oxygen atom. On this basis, hydrogen has an atomic weight of 1.0078.

ATRAN.

Classified definition. (References: AFM 100-50.)

ATRAN/ERTIAL.

Classified definition. (Reference: AFM 100-50.)

ATRC (AIR TRAINING COMMAND).

Major air command with headquarters at Scott Air Force Base, Illinois; having the mission of providing training for Air Force officers and airmen.

ATT (AIR TACTICS TECHNICIAN).

Noncommissioned officer who assists the air tactics officer.

ATTACHMENT.

1. Supplementary device composed of parts and/or assemblies which, when fastened to or mounted on an end item, varies or extends the basic function thereof.

2. Plant elements fastened to a supporting structure.

ATTACHMENTS, TREE.

Parts of telephone plant fastened to a tree.

ATTACK.

Act of offense or act of striking at a physical object with the purpose of inflicting injury, damage, or destruction.

ATTENDED TELEPHONE CENTER.

Attended telephone center usually is established at Air Force installations by the commercial communications companies, when necessary, as an aid in handling large volumes of long distance toll calls. Attended telephone centers benefit the commercial communications company primarily, and are of secondary benefit to the Air Force.

ATTENTION DISPLAY.

Tabular or vector message, computer generated on the display tubes of an operator's console, drawing attention to a particular situation.

ATTENUATING.

Decreasing electrical current, voltage or power in a communication channel. Refers to audio, radio, or carrier frequencies.

ATTENUATION.

1. Attenuation of a wave is the decrease in amplitude which accompanies propagation or passage through equipment lines, or space as in radio. Degree of attenuation is commonly measured and stated in decibels.

2. Decrease in magnitude in transmission from one point to another. It may be expressed as a ratio, or, by extension of the term, in decibels, or nepers.

3. Of a quantity associated with a traveling wave in a homogeneous medium, the decrease with distance in the direction of propagation.

Note. In a diverging wave, attenuation includes the effect of divergence.

CURRENT. Ratio of the current, of a transducer, in its input circuit to the current in a specified load impedance.

SPACE. Loss of energy, expressed in decibels, of a signal in free space; caused by such factors as absorption, reflection, scattering, and dispersion.

VOLTAGE. Ratio of the signal voltage across its input to the signal voltage delivered to a specified load impedance of a transducer.

WAVE. Decrease in amplitude with distance in the direction of wave propagation.

ATTENUATION CONSTANT.

1. Part of the propagation constant that refers to the decrease of signal amplitude over a given length of the transmission medium.

2. For a traveling plane wave at a given frequency, the rate of exponential decrease of the amplitude of a field component (or of the voltage or current) in the direction of the propagation, in nepers or decibels per unit length.

ATTENUATION DISTORTION.

1. Distortion that causes a decrease in the amplitude of a signal.

2. Departure, in a circuit or system, from uniform amplification or attenuation over the frequency range required for transmission; the effect of such departure on a transmitted signal.

ATTENUATION EQUALIZER.

Device for altering the total transmission loss of a circuit for various frequencies in order to make substantially equal, the total transmission loss for all frequencies within a certain range.

ATTENUATION-FREQUENCY DISTORTION.

Form of wave distortion in which the relative magnitudes of the different frequency components of the wave are changed.

ATTENUATION NETWORK.

Arrangement of circuit elements, usually impedance elements inserted in circuitry to introduce a known loss or to reduce the impedance level without reflections.

ATTENUATION RATIO.

Magnitude of the propagation ratio; that is, the ratio which indicates the relative decrease in energy.

ATTENUATOR.

Device for reducing the amplitude of a wave. Attenuators are most commonly combinations or networks of resistances either fixed or adjustable. In its many different forms and applications, the attenuator becomes known variously as pad, gain control, level adjustor, volume control, etc.

2. Network of variable resistors which is used to reduce the strength of an audio-frequency or radio frequency signal a desired amount without introducing appreciable distortion. The corresponding nonadjustable device is called a pad.

3. Receiver control similar in operation to a broadcast receiver volume control. It is used to reduce the strength of the signal.

ATTRACTION.

Force that tends to make two objects approach each other. Attraction exists between two unlike magnetic poles (N and S) or between two unlike static charges (+ and -).

AUDIBLE.

Capable of being heard by the average human

ear. The approximate range of human hearing is between 20 and 20,000 cycles per second, but actual limits vary greatly with different individuals.

AUDIBLE ALARMS.

Alarm provided on each situation-display console (and on some auxiliary consoles) to alert an operator to a condition requiring his action or to the fact he has performed an improper action.

AUDIBLE BUSY SIGNAL.

Audible signal connected to the calling line to indicate that the called line is in use.

AUDIBLE RINGING SIGNAL.

Audible signal connected to the calling line to indicate that the called station is being rung.

AUDIBLE SIGNAL DEVICE.

General term, in protective signaling, for bells, buzzers, horns, whistles, sirens, or other devices which produce audible signals.

AUDIO.

Pertaining to frequencies of normally audible sound waves (between 20 and 20,000 cycles per second).

AUDIO AMPLIFIER.

Device that amplifies audio-frequency signals.

AUDIO BAND.

Band used to designate the range of audio frequencies passed by an amplifier, receiver, transmitter, etc.

AUDIO COMPONENT.

Portion of any wave or signal, the frequencies of which are within the audible range.

AUDIO FREQUENCY.

Frequency which can be detected as a sound by the human ear. The range of audio frequencies extends approximately from 20 to 20,000 cycles per second.

AUDIO OSCILLATOR.

Instrument designed to generate an electrical signal in the audio-frequency range. (Reference: AUDIO-FREQUENCY OSCILLATOR.)

AUDIO PATCH BAY.

Specific patch panels provided for termination of

all audio circuits and equipment used in the channel and technical control facility. This equipment may also be found in transmitting and receiving stations.

AUDIO PEAK LIMITER.

Circuit used in an audio-frequency system to cut off peaks that exceed a predetermined value. Generally used in the audio system of a radio transmitter to prevent over modulation and to protect equipment from overloading.

AUDIO TRANSFORMER.

Transformer designed to transfer audio-frequency signals from one circuit to another. Commonly used to match two different impedances and permit maximum power transfer.

AUDIO-FREQUENCY AMPLIFIER.

Device that amplifies audio-frequency signals.

AUDIO-FREQUENCY CHOKE.

Coil used to impede the flow of audio-frequency currents; generally a coil wound on an iron core.

AUDIO-FREQUENCY OSCILLATOR.

Oscillator unit or circuit producing oscillations at audio frequencies; such as an oscillator used with headphones and a telegraph key for code practices. (Reference: AUDIO OSCILLATOR.)

AUDIO-FREQUENCY PEAK LIMITER.

Circuit used in an audio-frequency system to cut off peaks that exceed a predetermined value. Generally used in the audio system of a radio transmitter to prevent modulation and to protect equipment from overloading.

AUDIO-FREQUENCY SHIFT MODULATION.

System where a 1500-cycle tone represents picture black, a 2300-cycle tone represents picture white, and frequencies between 1500 and 2300 cycles represent shades of gray. For photographic transmission the black and white frequencies are reversed. This system of modulation is used for sub-carrier frequency shift transmission on a radio circuit. The 1500 to 2300-cycle swing is standard but other frequencies may be used.

AUDIO-FREQUENCY TRANSFORMER.

Transformer designed to transfer audio-frequency

signals from one circuit to another. Commonly used to match two different circuit impedances and permit maximum power transfer.

AUDIOGRAM.

Graph plotting hearing loss versus frequency, or percentage of hearing versus frequency.

AUDIOMETER.

Instrument used to test the power of hearing or the intensity of audibility of sounds. It consists of an audio oscillator having variable calibrated output, capable of generating a wide range of audio frequencies.

AUDION.

Three electrode vacuum tube.

AUDITION.

Studio test or rehearsal of all or part of a program prior to a radio broadcast.

AUDITORY SENSATION AREA.

Area inclosed by the curves of an auditory diagram defining the maximum tolerable and minimum perceivable intensities appreciated as sound by the ear.

AUM (AIR-TO-UNDERWATER MISSILE).

Missile designed to be dropped from aircraft, and upon contact with the surface of water, to pursue or seek out an underwater moving target, such as a submarine, by means of an internal or radio guided homing device.

AURAL.

Pertaining to the ear or to the sense of hearing.

AURAL RADIO RANGE.

Radio transmitter, the courses of which are normally followed by interpretation of an aural signal.

AURAL SIGNAL.

Signal corresponding to the sound portion of a television program. The audible component of a signal.

AURAL TRANSMITTER.

Radio equipment, in television, for transmission of aural signals.

AURORA.

Caused by particles radiated from the sun that are guided into the polar regions by the earth's magnetic field. Auroral activity extends from about 65 to 350 miles above the earth and is maximum in zones lying about 20 degrees from the earth's geometric poles.

AURORAL ABSORPTION.

Absorption of radio waves due to auroral activity. Auroral activity is caused mainly by particle radiation from the sun.

AUTHENTICATION.

1. Security measure designed to protect a communications system against fraudulent transmissions.

2. Evidence by proper signature or seal that a military document is genuine and official.

NET. Identification used on a communication network to establish the authenticity of several stations.

STATION. Security measure designed to establish the authenticity of a transmitting or receiving station.

TRANSMISSION. Security measure embodying self-authentication, message authentication, and station or network authentication, whereby, a station may establish the authenticity of its own transmissions.

AUTHENTICATION ELEMENT.

Element on which an authentication of a message, transmission, or station, is based.

AUTHENTICATION EQUIPMENT.

Classified definition. (Reference: AFM 100-50.)

AUTHENTICATION MESSAGE.

Security measure designed to establish the authenticity of a message by means of an authenticator within the transmission derived from certain predetermined elements of the message itself.

AUTHENTICATION TEST ELEMENT.

Element on which an authentication of a message, transmission or station is based.

AUTHENTICATOR.

Letter, numeral, or groups of letters or numerals,

or both, composed in a prearranged manner and usually inserted at a predetermined point within a transmission for the purpose of attesting to the authenticity of the message or transmission.

AUTHORIZED FREQUENCY.

Portion of the radio spectrum the width of which is the necessary bandwidth of emission plus twice the prescribed frequency tolerance.

AUTO (AUTOMATIC).

1. Designating firearms that are fully automatic or semiautomatic.

2. Designating mechanisms that work in reaction to certain conditions, such as an automatic horn, automatic valve, etc.

3. Designating actions or movements executed by use of automatic equipment, such as an automatic approach, automatic landing, etc.

4. Designating a standard operating procedure observed in distributing or issuing something.

AUTODYNE CIRCUIT.

Vacuum-tube circuit which serves simultaneously as an oscillator and a heterodyne detector.

AUTODYNE RECEPTION.

System of heterodyne reception through the use of a device which is both an oscillator and a detector.

AUTOMATIC.

1. Designating firearms that are fully automatic or semi-automatic.

2. Designating mechanisms that work in reaction to certain conditions, such as automatic horn, automatic valve, etc.

3. Designating actions or movements executed by use of automatic equipment, such as an automatic approach, automatic landing, etc.

4. Designating a standard operating procedure observed in distributing or issuing something.

AUTOMATIC BACK BIAS.

Technique which consists of one or more automatic gain control loops to prevent overloading of the receiver by large signals, whether jamming or actual radar echoes.

AUTOMATIC BASS COMPENSATION.

Circuit used in receivers to make bass notes sound more natural at low volume settings. The circuit usually consists of a resistor and capacitor and automatically compensates for the poor response of the human ear to weak sounds.

AUTOMATIC BRIGHTNESS CONTROL.

Circuit used in television receivers to keep the average brightness of the reproduced image essentially constant. Its action is like that of an automatic volume control circuit.

AUTOMATIC CARRIER LANDING SYSTEM.

Combination radio-radar unit developed for the Navy for use in landing aircraft on carriers under adverse weather conditions. Radar is used to locate the aircraft and determine its position relative to the carrier deck. Altitude, speed, and course are calculated by an electronic computer and fed into a radio transmitter, which directs the aircraft into a flight pattern. If approach is incorrect, the system will automatically wave off the approaching aircraft.

AUTOMATIC CHECK.

Check performed by equipment built into an electronic computer specifically for that purpose and automatically accomplished each time the pertinent operation is performed.

AUTOMATIC CIRCUIT BREAKER.

Device that automatically opens a circuit, usually by electromagnetic means, when the current exceeds a safe value.

AUTOMATIC CONTROL.

Arrangement of electrical controls which provides for opening and/or closing switching devices in an automatic sequence and under predetermined conditions. These switching devices maintain the required character of service and provide adequate protection against all usual operating emergencies.

AUTOMATIC CUTOUT.

Device, usually operated either by centrifugal force or by an electromagnet, that automatically removes (cuts out) some part of a circuit at the proper moment. Used on induction motors to

cut out the starting winding when operating speed is attained.

AUTOMATIC DIGITAL TRACKING AND CONTROL SYSTEM.

Classified definition. (Reference: AFM 100-50.)

AUTOMATIC DIRECTION FINDING.

System, in which the direction finding information is resolved and placed upon the search scopes as an intensified sweep indicating the azimuth bearing of the incoming call. The equipment is operated automatically by the incoming radio carrier.

AUTOMATIC ELECTRONIC DATA SWITCHING CENTER.

Communications center designed specifically for the transmission, relay, switching, and reception of digitalized data by automatic electronic methods.

AUTOMATIC EXCHANGE.

Exchange at which communication between subscribers is effected without the intervention of an operator, by means of switches set in motion by the operation of a dial on the originating subscriber's instrument.

AUTOMATIC FIRE ALARM SYSTEM.

Fire alarm system for automatically detecting the presence of fire and initiating signal transmission without human intervention.

AUTOMATIC FREQUENCY CONTROL.

1. System tending to hold the frequency of an oscillatory circuit constant despite other influences that normally would introduce a frequency change.
2. Circuit that holds a radio receiver on the frequency of the station to which it is tuned.

AUTOMATIC G-BIAS.

(Reference. AUTOMATIC GRID BIAS.)

AUTOMATIC GAIN CONTROL.

1. Type of circuit used to maintain the output volume of a receiver constant, regardless of variations in the signal strength applied to the receiver.

2. Self-acting compensating device which maintains the output of a transmission system constant within narrow limits in the face of wide variations in the attenuation of the system.

3. Radar circuit which prevents saturation of the radar receiver by long blocks of received signals, or by a carrier modulated at low frequency.

AUTOMATIC GAIN STABILIZATION.

Circuit, used in certain IFF equipments and radar beacon systems, which serves to maintain optimum sensitivity in a superregenerative stage by keeping the noise pulse lead constant. The gain of the tube is controlled so that noise pulse, characteristic of a superregenerative receiver, are held to a constant level while receiving signals are permitted to pass without limiting. The system thus prevents random noises from triggering the automatic transmitter associated with the receiver.

AUTOMATIC GRID BIAS.

Voltage drop formed by the passage of plate current of a vacuum tube through a resistor in its own cathode circuit.

AUTOMATIC LEVEL COMPENSATION.

System which automatically compensates for variations in the circuit. (Reference: AUTOMATIC VOLUME CONTROL.)

AUTOMATIC MACHINE EQUIPMENT.

Equipment that provides automatic control for any type of rotating machine or rectifier.

AUTOMATIC MESSAGE ACCOUNTING SYSTEM.

Apparatus for recording and processing on continuous tapes the data required for computing telephone charges on certain classes of calls. The system may include provisions for compiling all charges and credits which affect the customer's bill and for automatic printing of the bill.

AUTOMATIC MORSE TELEGRAPHY.

Automatic telegraph transmission usually accomplished by a code wheel or tape.

AUTOMATIC NOISE LIMITER.

Vacuum tube circuit that automatically cuts

off all noise peaks that are stronger than the highest peak in the desired signal being received, thereby preventing loud crashing noises due to strong atmospheric or man-made interference.

AUTOMATIC NUMBERING EQUIPMENT.

Type of equipment associated with tape transmitters which automatically transmits a channel number.

AUTOMATIC PILOT.

Control mechanism which initiates corrections in aircraft control surfaces so as to maintain a steady course without manual assistance.

AUTOMATIC RADIO COMPASS.

Radio direction finder having provisions for rotating the loop antenna automatically to the correct position, so that a pilot can secure a radio bearing simply by glancing at the indicator dials, without making mechanical adjustments and without calculations.

AUTOMATIC RANGE, BEARING, OR ELEVATION MEASUREMENTS.

System in which range, bearing, or elevation is determined automatically by a mechanism actuated by an echo signal.

AUTOMATIC RECLOSING.

Means provided for automatically reclosing a circuit breaker after it has tripped under abnormal conditions.

AUTOMATIC REGULATOR.

Device for regulating a system in such a manner that changes in its operation are initiated by changed conditions and carried out without the intervention of an attendant.

AUTOMATIC RELAY.

Means of selective switching which causes automatic equipment to record and retransmit communications.

AUTOMATIC SCANNING RECEIVERS.

Receivers which can automatically and continuously sweep across a preselected frequency either to stop when a signal is found or to plot signal occupancy within the frequency spectrum being swept.

AUTOMATIC SEARCH JAMMER.

Intercept receiver and jamming transmitter system which automatically searches for and jams enemy signals of specific radiation characteristics.

AUTOMATIC SENSITIVITY CONTROL.

Circuit used for automatically maintaining receiver sensitivity at a predetermined level. Similar to automatic gain control, but it affects the receiver constantly rather than during the brief interval selected by the range gate.

AUTOMATIC SEQUENCING.

Ability of a computer to perform successive operations without human intervention.

AUTOMATIC SHORT-CIRCUITER.

Device designed to automatically short circuit the commutator bars in some forms of single-phase commutator motors.

AUTOMATIC START CIRCUIT.

Circuit which automatically starts the recording of a facsimile transmission.

AUTOMATIC STARTER.

Device for starting a system, performing the various starting operations in the correct sequence, and requiring no action by an attendant after being given the initial impulse by means of a push button or, similar device.

AUTOMATIC STATION.

Generating station, substation, radio station, etc. (usually unattended) that, under predetermined conditions, goes into operation automatically, and in correct sequence maintains the required character of service by automatic means, provides protection against usual operating emergencies, and goes out of operation by automatic sequence under other predetermined conditions.

AUTOMATIC SWITCHBOARD.

Telephone switchboard in which the connections are made by using remotely controlled switches.

AUTOMATIC SWITCHING.

Method by which automatic connection is made between two or more teletypewriter circuits.

AUTOMATIC SWITCHING EQUIPMENT.

Equipment for making telephone connections au-

tomatically without the assistance of manual operation.

AUTOMATIC TELEGRAPH TRANSMISSION.

Form of telegraphy in which telegraph signals are transmitted mechanically from a perforated tape.

AUTOMATIC TELEGRAPHY.

Method of telegraph operation in which, by the use of automatic apparatus, the manual operations involved are effectively reduced or eliminated.

AUTOMATIC TELEPHONE SYSTEM.

Telephone system in which telephone connections between customers are ordinarily established by electrical and mechanical apparatus controlled by pulses produced by a calling device.

AUTOMATIC TOLL TICKETING.

System whereby toll calls are automatically recorded, timed, and toll tickets printed, under control of the calling telephone's dial pulses and without the intervention of an operator.

AUTOMATIC TIME SWITCH.

Combination of a switch with an electric or spring-wound clock, arranged to turn an apparatus on and off at predetermined times.

AUTOMATIC TRACKING.

Process, in radar, whereby a mechanism actuated by an echo, automatically keeps the radar beam set on a target and simultaneously, automatically determines the range of the target.

AUTOMATIC TRACKING RADAR.

Radar set which can continually and automatically correct its beam orientation to keep a selected target in its beam. Some tracking radars also supply range tracking information to computers for fire control systems.

AUTOMATIC TRAIN.

Automatic training of the antenna in azimuth by automatic following of the target.

AUTOMATIC TRANSFER EQUIPMENT.

Equipment which automatically transfers a load so that a source of power may be selected from one of several incoming lines.

AUTOMATIC TRANSFORMER EQUIPMENT.

Equipment that provides automatic control for connecting and disconnecting additional transformer capacity at an automatic station in response to overload and underload demands, respectively.

AUTOMATIC TRIPPING.

Opening of a circuit breaker, under predetermined or other conditions, without the intervention of an operator.

AUTOMATIC TUNING.

System that tunes a radio receiver automatically to a predetermined station when a button or lever is pressed.

AUTOMATIC VIDEO NOISE LIMITING.

Classified definition. (Reference: AFM 100-50.)

AUTOMATIC VOLTAGE REGULATOR.

Device or circuit which maintains a constant voltage.

AUTOMATIC VOLUME CONTROL.

1. Self-acting compensating device which maintains the output of a transmission system constant within narrow limits in the face of wide variations in the attenuation in that system.

2. Self-acting device which maintains the output of a radio receiver or amplifier substantially constant within relatively narrow limits while the input voltage varies over a wide range.

AUTOMATIC VOLUME EXPANSION.

Special audio-frequency circuit that increases the volume range of a radio program or phonograph record by making loud portions louder and weak portions weaker. Since the volume range of a program is generally compressed at the point of broadcast, automatic volume expansion tends to make radio reception more like the actual program.

AUTOMATIC-ALARM RECEIVER.

Complete receiving, selecting, and warning device capable of being actuated automatically by intercepted radio-frequency signals forming the international automatic alarm signal.

AUTOMATIC-ALARM-SIGNAL KEYING DEVICE.

Device capable of automatically keying the radio-telegraph transmitter on board a vessel so as to transmit the international automatic-alarm signal.

AUTOMATIC-TRACK-WHILE SCAN.

Classified definition. (Reference: AFM 100-50.)

AUTOMATION.

Device or mechanism that imitates human actions.

AUTOSYN.

Trade name for an angular-position control device manufactured by Western Electric Co. A telesynchronous device, similar to a selsyn (G.E.) or a synchro (Westinghouse), comprised of two units; a transmitter and an indicator, so arranged electrically that changes in the angular position of the transmitter are reproduced by the rotor of the indicator.

AUTOTRANSFORMER.

1. Transformer with a single winding (electrically) in which the whole winding acts as the primary winding, and only part of the winding acts as the secondary (stepdown); or part of the winding acts as the primary and the whole winding acts as the secondary (step-up).

2. Voltage, current, or impedance transforming device in which parts of one winding are common to both primary and secondary circuits.

AUTOTRANSFORMER STARTER.

Motor starter having an autotransformer to furnish a reduced voltage for starting. It includes the necessary switching mechanism and is frequently called a compensator or autostarter.

AUX (AUXILIARY).

That which aids and is additional to. The abbreviation AUX is used in combination only as in AuxComd meaning auxiliary command.

AUXILIARY CONSOLE.

Console containing intervention switches, alarms, and warning lights which an operator uses to perform his duties; the auxiliary console may or

may not contain a digital-display tube and telephone equipment.

AUXILIARY CONTACTS.

Contacts, in a switching device, in addition to the main circuit contacts, which function with the movement of the latter.

AUXILIARY CONTROL UNIT.

Unit containing supplementary controls to main control and general control.

AUXILIARY DEVICE.

Separate piece of equipment used with an instrument to extend its range, increase its accuracy, or otherwise extend its operation capabilities.

AUXILIARY FIRE ALARM BOX.

Fire alarm box containing the apparatus necessary to trip a master fire alarm box from a remote point.

AUXILIARY POSITION LIGHT.

Light, in aeronautic lighting, used to supplement normal position lights.

AUXILIARY RELAY.

Relay which operates in response to the opening or closing of its operating circuit to assist another relay or device in the performance of a function.

AUXILIARY SWITCH.

Switch actuated by some main device such as a circuit breaker, for signaling, interlocking, or other purposes.

AUXILIARY TRANSMITTER.

Transmitter maintained only for transmitting the regular programs of a station in case of failure of the main transmitter.

AUXILIARY-NORMAL CONTROL.

Control used for selecting the source of main power to a system.

av (AVIATION).

Of or pertaining to aviation. The abbreviation av is used in combination only as in avCad meaning aviation cadet.

av (AVIATOR).

One whose profession is that of flying heavier-

than-air aircraft.

AVAILABLE LINE.

Portion of the length of a scanning line which can be used for picture signals: Usually expressed as a percentage of the length of scanning line. For example, the Y-inch diameter drum of the TXC equipment has a circumference of 18.8", but 0.5" is required for clamping and 0.3" for variations in phasing; therefore the available line is 18" and the percentage is 96%.

AVAILABLE POWER.

1. Available power, in communication practice, at a point in a circuit is the power that would be transferred past that point where the impedance looking toward the load conjugates to the impedance looking toward the source.
2. Mean square, in a linear source of electric energy, of the open circuit terminal voltage of the source divided by four times the resistive component of the impedance of the source.

AVAILABLE-POWER GAIN.

Ratio, in an electric transducer, of the available power from the output terminals of the transducer, under specified input termination conditions, to the available power from the driving generator. The maximum available-power gain is obtained when the input termination admittance is the conjugate of the driving point admittance at the input terminals of the transducer.

AVC (AUTOMATIC VOLUME CONTROL).

1. Self-acting compensating device which maintains the output of a transmission system constant within narrow limits in the face of wide variations in the attenuation in that system.
2. Self-acting device which maintains the output of a radio receiver or amplifier substantially constant within relatively narrow limits while the input voltage varies over a wide range.

AVCS (ASSISTANT VICE CHIEF OF STAFF).

AVERAGE NOISE FIGURE.

Ratio in a transducer, of total output noise power to the portion thereof attributable to thermal

noise in the input termination, the total noise being summed over frequencies from zero to infinity, and the noise term temperature of the input termination being standard (290°K).

AVERAGE POWER.

Power supplied to the antenna during normal operations, averaged over a time sufficiently long, compared to the period corresponding to the lowest frequency encountered in actual modulation. (Reference: AVERAGE VECTOR POWER.)

AVERAGE POWER OUTPUT.

Radio-frequency power, in an audio-modulation transmitter, delivered to the transmitter output terminals, averaged over a modulation cycle.

AVERAGE SPEECH POWER.

Average value of the instantaneous speech power for a given time interval.

AVERAGE VALUE.

1. Value obtained by dividing the sum of a number of quantities by the number of quantities represented.
2. Average of many instantaneous amplitude values taken at equal intervals of time during an alternation (half-cycle) of alternating current. The average value of an alternation of a pure sine wave is 0.637 times its maximum or peak amplitude value.

AVERAGE VALUE OF A PERIODIC QUANTITY.

Average of the values of the quantity taken throughout one period.

AVERAGE VECTOR POWER.

Power at the points of entry of an electrical circuit, averaged over a time interval which contains a large number of periods of the ac, is equal to the square root of the sum of the squares of the averaged active power during the interval and of the average reactive power during the same interval.

AVERAGE VOLTAGE OF A STORAGE BATTERY.

Average value of voltage during the period of charge or discharge.

AVIATION.

Of or pertaining to aviation.

AVIATION CHANNEL.

Band of frequencies assigned for radio communication between aircraft and ground stations.

AVIATION SERVICE.

Radio communication or special service carried on by aircraft stations, airport control stations, aeronautical stations, aeronautical fixed stations, and flying-school stations.

AVIATOR.

One whose profession is that of flying heavier-than-air aircraft.

AVOGADRO'S NUMBER.

Number of molecules in a mass numerically equal to its molecular weight. The number is 6.06×10^{23} .

AW (AIR WARNING).**AW (AIRCRAFT WARNING).****AWC (AIR WAR COLLEGE).**

School of the Air University charged with the schooling of senior officers for high command and staff duty, and with the development of doctrine on the broad use of air power.

AWG (AMERICAN WIRE GAUGE).**AWIS (AUTOMATIC-TRACK-WHILE SCAN).**

Classified definition. (Reference: AFM 100-50.)

AWR (AWAITING PARTS).**AWS (AIR WEATHER SERVICE).**

Service under the Military Air Transport Service providing meteorological service primarily for the armed services.

AWY (AIRWAY).

Control area or portion thereof established in the form of a corridor equipped with radio navigational aids.

AXIAL LEADS.

Leads coming out from the ends and along the axis of a resistor, capacitor, or other axial part.

AXIS.

Straight line, real or imaginary, that passes through a body and about which the body may, or actually does, revolve.

RADIOLOGICAL. Line drawn from the center of burst along the mean line of average wind direction.

X. Reference axis in a quartz crystal.

Y. Line perpendicular to two opposite parallel faces of a quartz crystal.

AXIS OF SIGNAL COMMUNICATIONS.

1. Line or route, on which line the starting position and probable future location of the command post of a unit during a troop movement.
2. Main route along which messages are relayed or sent to and from combat units in the field.

AXIS OF THRUST.

Imaginary line drawn through the motor, along which the thrust or reaction of the motor is directed.

AXIS OR BORE.

Center or straight line through the center of the bore of a gun.

AYRTON SHUNT.

High-resistance shunt used to increase the range of a galvanometer without changing the damping.

AZ-EL DISPLAY.

Modified type of PPI presentation showing two separate radar displays on one cathode-ray screen. One display presents bearing information and the other shows elevation.

AZIMUTH.

1. Direction in the horizontal plane. Normally used in designating direction of a radio beam.
2. Used as a general term to indicate systems concerned with bearing information, e.g. azimuth scale or azimuth stabilization.
3. Direction, in celestial navigation, of one object from another expressed as an angle mea-

sured clockwise from north. Measured from true north unless otherwise indicated.

AZIMUTH ANGLE.

Component of a wave angle which is measured about a vertical axis, clockwise from north, and indicates direction in the plane of the earth's surface.

AZIMUTH GAIN REDUCTION.

Technique which allows control of the radar receiver system throughout any two azimuth sectors.

AZIMUTH INDICATING METER.

Ground-station receiver used at airports to determine the azimuth angle of arrival of signals to determine the azimuth angle of arrival of signals from an airplane. The direction of arrival is shown on the screen of a cathode-ray tube and can be radioed to a pilot coming in through fog or darkness.

AZIMUTH INSTRUMENT.

Telescopic instrument used for measuring horizontal angles.

AZIMUTH MECHANISM.

Mechanical means provided for turning an instrument in azimuth (in horizontal plane). It usually contains a worm and wormwheel to give accurate, smooth movement.

AZIMUTH RATE.

Rate of change of true bearing. (Reference: BEARING RATE.)

AZIMUTH STABILIZATION.

Presentation of indications on a radar display, so that north, or any specific reference line of direction, is always at the top of the screen.

AZIMUTH STABILIZED PLAN POSITION INDICATOR.

Presentation of signals on a plan position indicator arranged so the top of the screen represents a fixed direction and not the plane's tail-nose axis. The fixed direction may be north or may be established by a gyroscope.

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AZO

AZON.

Two-directional, radio-controlled missile. (Reference: RAZON.)

AZON BOMB.

Ordinary 1,000-pound bomb, fitted with a special

tail assembly, which enables the bombardier of the plane to steer the bomb a limited degree to the right or left by a radio signal.

AZUSA SYSTEM.

Apparatus which measures missile velocity and position during flight.

B**B (BIG PHOTO).**

Aircraft of the strategic air command participating in training, missions with North American Air Defense Command.

B (BOMBER).

CAA designation for schedule Broadcast Station (Broadcasts weather at 15 and 45 minutes after the hour; Air Force broadcasts, generally 29 minutes).

B

Letter normally employed to denote the high voltage plate power supply for one or more vacuum tubes.

B+ (B PLUS or B POSITIVE).

The positive terminal of a B-battery or other plate-voltage source for a vacuum tube, or the plate-circuit terminal to which the positive source terminal should be connected.

B- (B MINUS or B NEGATIVE).

Negative terminal of a B-battery or other plate-voltage source for a vacuum tube, or the plate-circuit terminal to which the negative source terminal should be connected.

B-BATTERY.

Battery that furnishes required dc voltages to the plate and screen-grid electrodes of the vacuum tubes in a battery-operated circuit.

B-DRAWINGS.

Schematics and wiring diagrams which are issued to cover special installations.

B-ELIMINATOR.

Power pack that changes ac. power-line voltage to dc source required by vacuum tubes.

B-H CURVE.

Curve plotted on a graph to show successive states during magnetization of a ferromagnetic material. A normal magnetization curve is a portion of a symmetrical hysteresis loop, while a virgin magnetization curve shows what happens the first time the material is magnetized.

B-INDICATOR.

Radarscope which displays target range and bearing by vertical and horizontal displacement on the radarscope face. (Reference: B-SCOPE.)

B-OPERATOR.

Operator assigned to a B-switchboard.

B-POWER SUPPLY.

Power source, for vacuum tubes, which provides a positive voltage for plate and other high-voltage electrodes.

B-SCAN.

Radarscope presentation in which the signal appears as a bright spot, with bearing as the horizontal coordinate and range as the vertical coordinate.

B-SCOPE.

Radarscope which displays target range and bearing by vertical and horizontal displacement on the radarscope face. (Reference: B-INDICATOR.)

B-SUPPLY.

Plate power source for vacuum tubes.

B-SWITCHBOARD.

Manual telephone switchboard in a local central office, primarily to receive and complete connections from other central offices.

BABBITT.

Antifriction metal used to line bearings.

BABBLE.

1. Aggregate crosstalk from a large number of disturbing channels.
2. Unwanted disturbing sounds in a carrier or other multiple channel system which result from the aggregate crosstalk or mutual interference from other channels.

BABS (BLIND APPROACH BEACON SYSTEM).

British pulse-type ground-based navigation beacon used for runway approach. The system makes use of the interrogator-transponder principles utilized in the REBECCA/EUREKA system. The BABS ground beacon is installed be-

yond the far end of the runway on the extended centerline. When interrogated by the Rebecca interrogator it retransmits two diverging beams, one of short duration pulses and the other of longer duration pulses. The beams are transmitted alternately, but, due to the fast switching, the aircraft receives what appears to be a continuous transmission of both beams. The two beams are aligned so as to form a line of equal signal amplitude extended along the centerline of the runway. A CRT in the aircraft displays both long and short pulses, superimposed on each other. If the aircraft is properly aligned with the runway, the pulses will be of equal amplitude. If to the left, the short pulses will be greater amplitude, and vice versa. Usually an Eureka beacon is provided to home to within range of the BABS beacon, which has a range of 14 to 20 miles when interrogated by aircraft at 1000 feet. BABS is capable of handling up to 30 aircraft at one time. The system does not provide glide path information.

BACK.

End of a motor or generator, which carries the coupling or driving pulley.

BACK BIAS.

1. Degenerative or regenerative voltage which is fed back to circuits before its originating point. It is usually applied to a control anode of a tube.
2. Voltage applied to a grid of a tube (or tubes) to restore a condition which has been upset by some external cause.

BACK CONNECTED SWITCH.

Switch in which the current-carrying conductors are connected to the stud back of the mounting base.

BACK CONTACT.

Relay, key, jack, or other contact designed to close a circuit and permit a current to flow when, in the case of a relay, the armature has released or fallen back; in other cases, when equipment is inoperative.

BACK ECHO.

Echo due to back lobe of an antenna.

BACK ELECTROMOTIVE FORCE.

Voltage developed in an inductive circuit by a changing or alternating current flowing through the circuit. The polarity of the voltage is, at each instant, opposite that of the applied voltage, and its amplitude is never greater than that of the applied voltage.

BACK PORCH.

Period of time, in a television circuit, immediately following a synchronizing pulse during which the signal is held at back level.

BACK PRESSURE.

Result of resistance to the normal flow of gases and liquids.

BACK-SHUNT KEYING OR SIGNALING.

Method of keying a radio transmitter, in which RF energy is fed to the antenna when the key is closed and to an artificial load when the key is open.

BACK-TO-FRONT RATIO.

Ratio used in connection with antennas, metal rectifiers, or any device in which signal strength or resistance in one direction is compared to that in the opposite direction.

BACKFIRE.

Sudden failure of rectifier action in a mercury-vapor rectifier tube due to an internal fault. Sometimes caused by excessive density of mercury vapor resulting from overheating of the cathode.

BACKGROUND.

1. Picture white of the copy being scanned when the picture is black and white only. Also undesired printing in the recorded copy of the picture being transmitted, resulting in shading of the background area.
2. Noise heard during a radio program caused by atmospheric interference or operation of the receiver at such high gain that inherent tube and circuit noises become noticeable.

BACKGROUND RADIATION.

Radiation indication due to presence of radio-active material in the vicinity of the measuring instrument.

BACKLASH.

Conditions wherein a gear forming part of a gear train may be moved without moving the next succeeding or preceding gear; due to space between the teeth of the meshing gears.

BACKSPACER.

Mechanism which is designed to retract and reset another item which moves in a predetermined path.

BACKUP FACILITY.

C-E facility which is established for the purpose of replacing or supplementing another C-E facility or facilities, under real or simulated emergency conditions. The alternate facility is usually some other method of C-E. Frequently, radio alternate facilities are established to replace or supplement wire facilities.

BADGE. (BASE AIR DEFENSE GROUND ENVIRONMENT).

BAFFLE.

1. Barrier or partition used to increase the effective length of the external transmission path between two points in an acoustic system as, for example, between the front and back of an electroacoustic transducer. Baffle is often used to increase the acoustic loading of the diaphragm.

2. Shielding structure.

3. Device for deflecting oil or gas in a circuit breaker.

BAFFLE PLATE.

Metal plate inserted in a waveguide to reduce the cross-sectional area for wave conversion purposes.

BAKELITE.

Phenolic compound having good insulating qualities. Widely used in the construction of radio parts.

BAL (BASE AUTHORIZATION LIST).

List of all equipment specified by the unit allowance lists of the organizations (except tenant organizations) at a particular Air Force base or installation.

BALANCE.

1. Proper blending, of the different sounds that make up a radio program to give the desired artistic effect.

2. Proper positioning, in television of the various elements that make up a television scene to give the desired artistic effect.

ACTIVE. Summation of all return currents, in telephone repeater operation, at a terminal network balanced against the impedance of the local circuit or drop.

BALANCE-TO-UNBALANCE TRANSFORMER.

Device for matching a pair of lines, balanced with respect to earth, to a pair of lines not balanced with respect to earth.

BALANCED.

1. Electrically alike and symmetrical with respect to ground.

2. Arranged to provide balance between certain sets or terminals.

BALANCED AMPLIFIER.

Amplifier circuit in which there are two identical signal branches connected so as to operate with the inputs in phase opposition and with output connections in phase, each balanced to ground. (Reference: PUSH-PULL AMPLIFIER.)

BALANCED ARMATURE UNIT.

Driving unit used in magnetic loudspeakers, consisting of an iron armature pivoted between the poles of a permanent magnet and surrounded by coils carrying the AF current. Variations in AF current cause corresponding changes in armature magnetism and corresponding movements of the armature with respect to the poles of the permanent magnet.

BALANCED CIRCUIT.

Circuit in which there are substantially equal currents, either alternating or direct, in all main wires and substantially equal voltages between main wires and between each main wire and neutral wire.

BALANCED LINE.

Line or circuit which utilizes two conductors

or components instead of one conductor or component and ground (common conductor). A balanced line is usually preferred when minimum noise and crosstalk are desired.

BALANCED METHOD.

Method of measurement in which the reading is taken at zero. It may be a visual or audible reading and in the latter case the null is the no-sound setting. (Reference: NULL METHOD, or ZERO METHOD.)

BALANCED MODULATOR.

Amplifier in which the tube control grids are connected for parallel operation, the screen grids for push-pull operation (used as injector grids), and the plates for operation in push-pull. In its use in FM transmitters, the original oscillator signal is applied to the control grids and the modulating signal to the screen grids. The output is a signal of the same frequency as the oscillator, either in phase or 180° out of phase with it, and with an amplitude which depends upon the amplitude of the modulating signal.

BALANCE NETWORK.

Network designed for use in a circuit in such a way that two branches of the circuit are made substantially conjugate, i.e., such that a voltage introduced in one branch produces no change in current in the other branch.

BALANCED OSCILLATOR.

Oscillator in which the impedance centers of the tank circuit are at ground potential and the voltage between either end and their centers are equal in magnitude and opposite in phase when oscillating.

BALANCED TRANSMISSION LINE.

Transmission line having equal conductor resistances per unit length and equal impedances from each conductor to earth and to other electrical circuits.

BALANCED WIRE CIRCUIT.

Circuit whose two sides differ only by chance.

BALANCER.

Circuit used in a radio direction finder to balance out the antenna effect due to capacitance

between the loop and ground. Improves the sharpness of the direction indication.

BALANCING NETWORK.

1. Network for use with a hybrid set to simulate the impedance of a transmission line.
2. Any electrical circuit used to conjugate two or more interconnected elements.

BALANCING UNIT.

1. Small adjustable capacitors.
2. Small coils of wire added at splices to adjust wire-to-wire capacity.

BALLAST LAMP.

Resistance lamp which maintains nearly constant current by increasing in resistance as the current increases.

BALLAST RESISTANCE.

Self-regulating resistance, usually connected in the primary circuit of a power transformer to compensate for variations in the line voltage.

BALLAST RESISTOR.

Special type of resistor used to compensate for fluctuations in ac power line voltage. It is usually connected in series with the power supply to a receiver or amplifier. The resistance of a ballast resistor increases rapidly with increases in current through it, thereby tending to maintain essentially constant current despite variations in line voltage.

BALLAST TUBE.

1. Current-controlling resistance device designed to maintain substantially constant current over a specified range of variations in the applied voltage or the resistance of a series circuit.
2. Resistor consisting of an iron filament mounted inside an envelope filled with hydrogen. The ballast is rated to operate with the filament at temperatures as high as 690°C (1306°F). Here a crystalline change occurs if the heating current increases slightly. The hydrogen serves to dissipate the additional heat.

BALLASTIC GALVANOMETER.

Instrument that indicates the effect of a sudden rush of electrical energy, such as the discharge current of a capacitor.

BALLISTIC MISSILE.

Missile which travels through most of its trajectory without guidance or continued propulsion.

BALLOON REFLECTOR.

Balloon supporting confusion reflectors to produce fraudulent echoes.

BALLS OF FIRE.

Pyrotechnic decoy consisting of free-falling balls which provide an intense source of infrared radiation.

BALUN.

1. Antenna-matching device used to permit efficient coupling of a transmitter or receiver having an unbalanced output circuit to an antenna having a balanced transmission line; consists of two bifilar-wound inductors.

2. Device for converting balanced to unbalanced transmission lines, and vice versa, by placing suitable discontinuities at the junction between the lines instead of using lumped components.

BANANA JACK.

Jack that fits a banana plug. Generally designed for panel mounting.

BANANA PLUG.

Banana-shaped plug; elongated springs provide a low resistance compression fit. Has a spring metal tip which somewhat resembles a banana in shape.

BAND.

1. Range of frequency spectrum between two defined limits.

2. Used as applying to a group of radio channels assigned (usually by FCC) to a particular type of radio service. A range of frequencies (per second) within two definite limits.

Very low frequency (VLF) 10-30 kilocycles
Low frequency (LF) 30-300 kilocycles
Medium frequency (MF) 300-3,000 kilocycles

High frequency (HF) 3-30 megacycles
Very high frequency (VHF) 30-300 megacycles

Ultra high frequency (UHF) 300-3,000 megacycles

Super high frequency (SHF) 3,000-30,000 megacycles

3. Group of tracks on magnetic drum in an electronic computer.

CITIZEN'S RADIO. Band of frequencies between 460 and 470 MC assigned for the use of the general public for communication purposes.

BAND ELIMINATION FILTER.

Filter network which rejects a given band of frequencies while passing frequencies to either side of this band.

BAND OF FREQUENCIES.

Frequencies existing between two definite limits.

BAND PASS.

Number of cycles per second expressing the difference between the limiting frequencies at which the desired fraction (usually half-power) of the maximum output is obtained.

BAND SELECTOR SWITCH.

Switch which makes and breaks, at one time, all required connections to all tuning circuits in a receiver or transmitter in order to change over from one band of frequencies to another.

BAND SPREAD.

Refinement in the tuning system which makes it possible to separate stations on a crowded portion of the tuning dial. Used mostly in short-wave receivers.

BAND SPREADING.

1. Spreading of tuning indications over a wide scale range to facilitate tuning in a crowded band of frequencies.

2. Method of double sideband transmission in which the frequency band of the modulating wave is shifted upward in frequency so that the sidebands produced by modulation are separated in frequency from the carrier by an amount at least equal to the bandwidth of the original modulating wave, and second order distortion products may be filtered from the demodulator output.

BAND SUPPRESSION FILTER.

Filter designed to suppress a given band of frequencies.

BAND SWITCH.

Switch which makes and breaks, at one time, all required connections to all tuning circuits in a receiver or transmitter in order to change over from one band of frequencies to another.

BANDAGE.

Rubber ribbon about four inches wide for temporarily protecting a splice from moisture.

BANDPASS FILTER.

Circuit designed to pass, with nearly equal response, all currents having frequencies within a definite band, and to reduce substantially the amplitudes of currents of all frequencies outside that band.

BANDPASS RESPONSE.

Response characteristic in which a definite band of frequencies is transmitted uniformly.

BANDSPREAD TUNING CONTROL.

Separate tuning control provided on some short-wave receivers to spread stations in a single band of frequencies over an entire tuning dial.

BANDSTOP FILTER.

Filter having characteristics inverse to those of bandpass, barring frequencies within a defined band and offering low attenuation to those outside.

BANDWIDTH.

1. Bandwidth occupied by an emission is the band of frequencies comprising 99 percent of the total radiated power extended to include any discrete frequency on which the power is at least 0.25 percent of the total radiated power.

2. Range within the limits of a band. The width of a bandpass filter is generally taken as the limits between which its attenuation is not more than 3.0 decibels greater than its average attenuation throughout its pass band. Also used in connection with receiver selectivity, transmitted frequency spectrum occupancy, etc.

3. In a given facsimile system, the difference in cycles per second between the highest and lowest frequency components required for the adequate transmission of the facsimile signal.

4. Least frequency interval, of a wave, outside of which the power spectrum of a time-varying quantity is everywhere less than some specified fraction of its value at a reference frequency.

CAUTION: This definition permits the spectrum to be less than the specified fraction within the interval.

Note: Unless otherwise stated, the reference frequency is that at which the spectrum has its maximum value.

5. Range of frequencies, of a device, within which performance, with respect to some characteristic, falls within specific limits.

NOMINAL. Maximum band of frequencies assigned to a channel.

RF (RADIO-FREQUENCY). Band of frequencies comprising 99 percent of the total radiated power extended to include any discrete frequency on which the power is at least 0.25 percent of the total radiated power.

BANK.

Aggregation of similar devices connected together and used in cooperation. As used in automatic switching, a bank is an assemblage of fixed contacts over which one or more wipers or brushes move in order to establish electrical connections.

BANK WINDING.

Compact multilayer form of coil winding, for the purpose of reducing distributed capacitance, in which single turns are wound successively in each of two or more layers; the entire winding proceeding from one end of the coil to the other, without return.

BANK-AND-WIPER SWITCH.

Switch in which electromagnetic ratchet mechanisms are used to move the wipers to a desired group of terminals and to move the wipers over the terminals of this group to the desired bank contacts.

BANTAM JR. TUBE.

Extremely small vacuum tube with a glass envelope and special base. Used chiefly in hearing aids.

BANTAM TUBE.

Vacuum tube having a standard octal base, but a considerably smaller glass tube than a standard glass tube. It is identified by the letters GT following the tube type number, and is usually equivalent, electrically, to the standard-size tube.

BAR.

1. Centimeter-gram-second absolute unit of pressure equal to a pressure of one dyne per square centimeter.
2. Subdivision of a crystal slab, obtained by making two parallel saw cuts in planes perpendicular to the major surfaces of the slab.

BAR MAGNET.

Bar of hard steel that has been strongly magnetized and holds its magnetism, thereby serving as a permanent magnet.

BARIUM.

Element; the oxide of which is used in the cathode coating of vacuum tubes.

BARKHAUSEN EFFECT.

Succession of abrupt changes in magnetization occurring when the magnetizing force acting on a piece of iron or other magnetic material is varied.

BARKHAUSEN INTERFERENCE.

Interference caused by Barkhausen oscillations.

BARKHAUSEN OSCILLATOR.

Type of triode oscillator in which radio frequencies ranging from 300 to 1,500 mc are generated. The plate is negative and the grid is positive with respect to the cathode.

BARKHAUSEN-KURZ OSCILLATOR.

Circuit for generating ultra-high frequencies; the operation of which is dependent on the variation in the electrical field, about the positive

grid and negative plate of a triode, caused by oscillatory electrons in the inter-electrode spaces.

BARN.

Classified definition. (Reference AFM 100-50.)

BARRAGE JAMMERS.

Electronic jammers which spread their energy over a band which is wide compared to a radar bandwidth.

BARRAGE JAMMING.

Simultaneous jamming of a number of adjacent channels or frequencies.

BARRAGE, RESPONSIVE.

Classified definition. (Reference: AFM 100-50.)

BARRETTTER.

Early form of detector which works similar to present thermistors.

BARRIER LAYER.

Surface of contact between a metal and semiconductor. It acts as a rectifier of alternating currents. Some barrier layers when illuminated, generate a voltage through photovoltaic action. The junction between the copper and cuprous oxide in the photoelectric cell is a barrier layer. (Reference: BLOCKING LAYER.)

BARRIER-FILM RECTIFIER.

Rectifier in which a film having unilateral (single-direction) conductivity is in contact with metal or other normally conducting plates.

BARRIER-LAYER CELL.

Type of photovoltaic cell in which light acting on the surface of contact between layers of copper and cuprous oxide causes an electromotive force to be produced. (Reference: BLOCKING-LAYER CELL.)

BARYTRON.

Early name for the particle now known as a mesotron.

1. Number upon which a system of logarithms is based, such as 10 in the common system or e (in the natural system equal to 2.718).

2. Bottom, or principal surface on which a switch or vacuum tube is built up. (Reference: POSITIONAL NOTATION.)

BASE ALLOWANCE LIST.

Variant name for Base Authorization List.

BASE AUTHORIZATION LIST.

List of all equipment specified by the unit allowance lists of the organizations (except tenant organizations) at a particular Air Force base or installation.

BASE BAND.

1. Band of frequencies, generally extending from near zero frequency, containing all the frequency components of a multiplex signal.
2. Frequencies containing the intelligence used to modulate the carrier of a radio relay system.

BASE FREQUENCY.

Frequency, in any wave, which is considered to be the most important. In a driven system, it would, in general, be the driving frequency while in most periodic waves it would correspond to the fundamental frequency.

BASE INSULATOR.

Heavy-duty insulator used to support the weight of an antenna mast and insulate the mast from the ground of some other surface.

BASE LINE.

Horizontal (or vertical) line formed by the movement of the sweep on a cathode-ray tube.

BASE LINK BREAK.

Technique in radar which utilizes the characteristic break in the base line on an A-scope display due to a pulse signal of significant strength in noise jamming.

BASE LOAD.

Minimum load, of a power generator, over a given period of time.

BASE OPS (BASE OPERATIONS).**BASE RATE AREA.**

Area within the exchange in which all types of service are given without mileage charges.

BASE SECURITY COMMUNICATIONS SYSTEM.

Two-way radio communications system consisting of a base station and one or more portable and/or mobile units, used for the prompt and efficient control of air police and office of special investigations personnel and vehicles.

BASE SPEED.

Lowest speed, of an adjustable-speed motor, obtained at rated load, voltage, and temperature.

BASE STATION.

Land station, in the land mobile service, carrying on a service with land mobile stations. (A base station may secondarily communicate with other base stations incident to communication with land mobile stations.) Sometimes defined as a station in a land mobile system which remains in a fixed location and communicates with mobile stations.

BASE SUPPORT EQUIPMENT.

That equipment provided a base or organization, in addition to unit essential equipment, to enable the base to perform its assigned mission.

BASE WIRE AND TELEPHONE SYSTEM.

Facilities, both government-owned and commercial, on and off base, which are part of the overall base switchboard and switching facilities, outside plant, station equipment, and supporting structures. The entire system includes, but is not limited to, the following:

1. Administrative telephone system.
 - (a) Switchboard positions and associated switching equipment, power plant, etc.
 - (b) Local and foreign exchange trunk lines.
 - (c) Tie lines to other Air Force bases or installations.
 - (d) PBX stations and bridged stations located on and off base.
 - (e) Long distance toll terminals.
 - (f) Miscellaneous equipment and services offered by the telephone companies under filed tariffs.

2. Message toll telephone service.
3. Message telegraph service.
4. Fire-reporting telephone systems.
5. Aircraft accident emergency alarm communications systems.
6. Security telephone systems.
7. Auxiliary and satellite telephone systems.
8. Intercommunicating systems.
9. Public address systems.
10. Local weather disseminating system.
11. Remote lines to radio stations and navigational aids, and fixed meteorological facilities.
12. Fire detection and alarm systems which meet technical limitations of telephone cables.

BASE-LOADED ANTENNA.

Vertical antenna, having an inductance in series at the base for loading the antenna to secure a desired electrical length.

BASIC CODE.

Code book which is used solely as part of a composite system, the groups of which are never transmitted unenciphered but are used only to provide groups for use with cipher tables or pads.

BASIC NETWORK.

Electrical network designed to simulate the impedance and neglecting dissipation of a line at a particular termination.

BASKET WINDING.

Winding used on ac machines in which the coils are interlinked with each other like the links of a chain.

BASS.

Sounds in the low audio-frequency range. On the standard piano keyboard, all notes below middle C (256 cycles per second).

BASS COMPENSATION.

Emphasizing the low-frequency response of an audio amplifier at low volume levels to offset

the lowered sensitivity of the human ear to weak, low frequencies.

BASS CONTROL.

Control provided in radio receiver or AF amplifier to attenuate higher audio frequencies and thereby emphasize bass notes.

BASS REFLEX.

Method of extending the low-frequency range of a loudspeaker; accomplished by an opening in the cabinet enclosing the speaker.

BASS RESPONSE.

1. Extent to which a loudspeaker or audio-frequency amplifier handles low audio frequencies.
2. Ability of any device to pick up or reproduce low audio frequencies.

BASS-BOOSTING CIRCUIT.

Circuit that attenuates higher audio frequencies in order that low or bass frequencies will be emphasized by comparison.

BASSY.

Term applied to sound reproduction that over-emphasizes low-frequency notes.

BAT. (BATTLE).

1. Conflict between individuals, groups of individuals, or nations, especially an armed conflict within the framework of a war. Attributed with damage, dress, fatigue gear, formation, etc.
2. Specifically an air battle. Attributed with aircraft; comparable to combat.

BAT. (BATTLESHIP).

One of a class of the largest and most heavily armed and armored vessels.

BAT-HANDLE SWITCH.

Toggle switch having an actuating lever shaped like a baseball bat.

BATHTUB CAPACITOR.

Popular name for a type of capacitor inclosed in a metal housing having broadly rounded corners like those on a bathtub.

BATTERY.

1. Device for converting chemical energy into electrical energy.

2. Series of several galvanic cells which, when assembled, produce electrical current.

Note: The term battery is normally used when referring to a group of dry cells or storage cells.

A. Source of energy which heats the filaments of a vacuum tube.

B. Source of energy which causes current to flow in the plate circuit of a vacuum tube.

C. Source of energy which supplies a voltage for biasing the grid of a vacuum tube.

ALKALINE. Secondary cell or battery using an alkaline solution as the electrolyte.

COMMON. System of current supply where all dc energy for a unit of a telephone system is taken from one source in a central office.

FILAMENT. Source of energy which heats the filaments of a vacuum tube.

FLOATED. Storage battery kept in a state of full charge across the leads of a generator. The generator carries the load but the battery absorbs any peak loads.

GRID. Source of energy which supplies a voltage for biasing the grid of a vacuum tube.

LOCAL. Battery made of single dry cells located at the subscriber's station and distinguished from common battery.

PBX (PRIVATE BRANCH EXCHANGE).

Source of energy for the operation of a private branch exchange.

PLATE. Source of energy which causes current to flow in the plate circuit of a vacuum tube.

QUIET. Source of energy of special design or with added filters which is sufficiently quiet

and free from interference so that it may be used for speech transmission.

SIGNALING. Source of energy used to operate lamps and alarms for calling attention, to show the progress of a call, or to operate stepping magnets.

TALKING. Source of energy of special design or with added filters which is sufficiently quiet and free from interference that it may be used for speech transmission.

TESTING. High-voltage low-current source of energy used at test boards and test desks for the operation of Wheatstone bridges, and voltmeters.

BATTERY ACID.

Solution that serves as the electrolyte in a storage battery. In common lead-acid storage battery, the electrolyte is dilute sulphuric acid (H_2SO_4).

BATTERY ALARM.

Signal calling attention to an abnormal power supply condition.

BATTERY BOX.

Case holding dry cells for subscriber's local set.

BATTERY CHARGER.

Device used to convert alternating current into a pulsating direct current which can be used for charging a storage battery.

BATTERY CLIP.

Metal clip having a terminal to which a connecting wire can be attached and spring jaws that can be quickly snapped on a battery terminal or other point to which a temporary connection is desired.

BATTERY PAIR.

Paired conductors for supplying current.

BATTERY RECEIVER.

Radio receiver that obtains power, required by its vacuum tubes, from batteries.

BATTLE.

1. Conflict between individuals, groups of individuals, or nations, especially an armed conflict within the framework of a war. Attributed with damage, dress, fatigue gear, or formation, etc.
2. Specifically an air battle. Attributed with aircraft; comparable to combat.

BATTLE SHORT.

Switch for short-circuiting safety interlocks and lighting a red warning light.

BATTLE STAFF.

Officers of the military services assigned to an organization and designated by its commander to supervise air-defense operations within the organization's area of responsibility.

BATTLE STATIONS.

Degree of preparedness that required an interceptor or fire unit to be capable of immediately initiating a tactical scramble or an effective engagement.

BATTLESHIP.

One of a class of the largest and most heavily armed and armored vessels.

BAUD.

1. Unit of signaling speed. The speed in bauds is the number of code elements per second.
2. Term used to define the operating speed of a printing telegraph system. (The total number of mark and space—on and off—code elements per second). A teleprinter, running at such a speed that the maximum line frequency is 22.5 cps, is said to be operating at 45 bauds.

BAY.

1. Row of racks on which apparatus, in the form of panels or shelves, is mounted.
2. Vertical compartment in which a radio transmitter or other equipment is housed.
3. Portion of an antenna array.

BAYONET BASE.

Base having two projecting pins on opposite sides of a smooth cylindrical base, to engage in corresponding slots in a bayonet socket and hold the base firmly in the socket.

BAYONET SOCKET.

Socket for bayonet-base tubes or lamps having slots on opposite sides and one or more contact buttons at the bottom.

BAZOOKA.

1. Device used to match an unbalanced high-frequency transmission system into a balanced system, or vice versa.
2. Device used on a coaxial line to isolate the outer conductor from ground.

BB (BOMB).

1. Explosive or other lethal agent together with its container or holder, which is planted or thrown by hand, dropped from an aircraft, or projected by some other low-speed device and used to destroy, damage, injure, or kill.
2. Similar to this object in appearance, operation, or effect, a leaflet bomb, smoke bomb, photoflash bomb, a bomb-like container or chamber, etc.
3. To drop a bomb or bombs on a target, as a city, rallyard or body of troops.

BBC (BRITISH BROADCASTING COMPANY).

BC.

ITU designation for broadcasting station.

BCF.

ITU designation for FM broadcasting station.

BCI.

ITU designation for facsimile broadcasting station.

BCST (BROADCAST).

Radio broadcast of messages for which receiving stations make no receipt.

BCT.

ITU designation for television broadcasting station.

BEACH MARKER.

Device used to identify a beach or certain activities thereon, for incoming water-borne traffic.

BEACON.

1. Apparatus which transmits radio or radar beams for the purpose of orienting aircraft or radars.

2. Aeronautical light arranged, either through optical design or mechanical motion, to be visible at all azimuths, either continuously or consecutively, to designate a particular point on the surface of the earth.

AIRPORT. Beacon (light or radio) located at or near an airport for the purpose of indicating the location of the airport.

AIRPORT RUNWAY. Radio-range beacon that defines one or more approaches to an airport.

AIRWAY. Beacon, other than an airport beacon, located on or near an airway, and used for the purpose of indicating the location of the airway.

FAN MARKER. Radio beacon which radiates in a vertical fan shaped pattern. The signal can be keyed for identification purposes.

H. Nondirectional radio homing beacon which has a power output of 50 to 2000 watts.

HAZARD. Light beacon used to designate an extended or particularly dangerous hazard to air navigation.

HH. Nondirectional radio homing beacon, which has a power output of 2000 watts or greater.

HOMING. Radio transmitter which emits a distinctive or characteristic signal used for the determination of bearings, courses, or location.

IDENTIFICATION. Code beacon used to identify, positively, a particular point on the surface of the earth.

MH. Nondirectional radio homing beacon having an output power of 50 watts or less.

OSCILLATING. Beacon having an undulating beam characteristic brought about by periodic motion of the light source near the focal point of the optical system.

RADAR. Transponder used as a navigation beacon, which, when used in conjunction with other suitable equipment, permits the determination of bearing and/or range from the interrogator to the RACON.

RADIO. Radio transmitter which emits a distinctive or characteristic signal used for the determination of bearings, courses, or location.

RADIO MARKER. Radio navigation land station in the aeronautical radio navigation service which provides a signal to designate a small area above the station.

RADIO RANGE. Radio navigation land station in the aeronautical radio navigation service providing radio equisignal zones.

ROTATING. Light beacon having a flashing beam characteristic brought about by mechanical rotation of the optical system about a vertical axis.

Z MARKER. Equipment identical to the fan marker except that it is installed as part of a four course radio range station at the intersection of the four range legs and radiates vertically to indicate to aircraft when they pass directly over the range station. It is usually not keyed for identification.

BEACON COURSE.

Equisignal zone created by a radio beacon to guide aircraft along charted courses.

BEAD.

Glass, ceramic, or plastic insulators through which the inner conductor of a coaxial transmission line passes, and by means of which the inner conductor is supported in a position coaxial with the outer conductor.

BEAD SUPPORT.

Ceramic, glass, or plastic beads used to support the inner conductor in coaxial transmission lines.

BEADED TRANSMISSION LINE.

Line using beads to maintain the inner conductor in coaxial transmission lines.

BEAM.

1. Directed flow of energy into space.
2. Directional antenna.
3. Directed flow of electrons in a vacuum tube.
4. Constant unidirectional radio signal that is transmitted by an aircraft radio beacon for guidance of aircraft. An aircraft flying exactly on the course indicated by a radio beam is said to be flying the beam, or on the beam.
5. Angular range over which a microphone or loudspeaker gives maximum response.
6. Shaft or column of light; bundle of rays.

PENCIL. Radar beam in which the energy is confined to a narrow, approximately conical portion of space.

RADIO. Radio transmission along a very narrow selected path.

BEAM ANGLE.

Angle between the directions, on either side of the axis, at which the intensity of the radio-frequency field drops to one-half the value it has on the axis.

BEAM ANTENNA.

Antenna that concentrates its radiation into a narrow beam in a definite direction.

BEAM ATTACK.

Attack directed against the side of a target.

BEAM CURRENT.

1. Current carried by the electron stream that forms the beam in a cathode-ray tube.
2. Total anode current in a velocity-modulation tube. The actual current in the beam is smaller than the total anode current because focusing is never perfect.

BEAM FORMING PLATES.

Electron beam focusing elements in power tetrodes, and/or in cathode-ray tubes.

BEAM LOBE SWITCHING.

Method of determining the direction of a remote object by comparison of the signals corresponding to two or more successive beam angles, differing slightly from the direction of the object.

BEAM POWER TUBE.

1. Vacuum tube in which a directed electron beam results in greater power output. Used in the output stages of radio receivers and in other electronic apparatus.
2. Tetrode or pentode in which the electron stream is directed to flow in concentrated beams from the cathode to the plate.

BEAM RIDER GUIDANCE.

Missile guidance wherein a missile, through a self-contained mechanism, automatically guides itself along a beam.

BEAM SWITCHING.

Method of obtaining more accurately the bearing and/or elevation of an object by comparing the signals received when the beam is in directions differing slightly in bearing and/or elevation. When these signals are equal, the object lies midway between the beam axis.

BEAM TRANSMISSION.

Radio transmission concentrated into a beam by specially constructed directional antenna.

BEAM VOLTAGE.

Voltage between the cathode and anode which determines the average velocity of the electrons in the beam.

BEAMWIDTH.

1. Angle between the directions, on either side of the axis, at which the intensity of the radio frequency field drops to one-half the value it has on the axis.
2. Width of the sector of effective radiation (or effective pick-up) of an antenna. Measured in degrees and normally taken as the angle between the half power points on the polar pattern of the antenna. (Reference: BEAM ANGLE.)

BEARING.

1. Situation of one point with respect to another.

Unless otherwise stated, all bearings are measured at the position of an observer, clockwise from 0° to 360° .

2. Line-of-sight direction, relative to a designated point, usually true or compass north, from the observer (radar antenna) to the target.
3. Support for a rotating shaft.

CLASS A. Bearing which a direction finding operator may reasonably consider to be accurate to within plus or minus two degrees.

CLASS B. Bearing which a direction finding operator may reasonably consider to be accurate to within plus or minus five degrees.

CLASS C. Bearing which a direction finding operator may reasonably consider to be accurate to within plus or minus ten degrees.

GRID. Bearing in which the direction of the reference line is grid north.

MAGNETIC. Angular line of position of an object in respect to the earth's magnetic north pole, expressed in degrees clockwise from that pole.

OMNI. Bearing, usually magnetic, of an omnidirectional radio range as observed from a vehicle.

RADIO. Angle between the apparent direction of a definite source of emission of electromagnetic waves and a reference direction, as determined at a radio direction-finding station. A true radio bearing is one for which the reference direction is that of true north. A magnetic radio bearing is one for which the reference direction is that of magnetic north.

RECIPROCAL. Bearing plus or minus 180° .

RELATIVE. Direction of an object measured clockwise in degrees from a ship or aircraft heading.

TRUE. Bearing given in relation to true geographic north.

BEARING BUZZER.

Buzzer and its attendant circuit used to indicate transmission of a bearing to a remote station.

BEARING CURSOR.

Mechanical bearing line on a PPI-type display for reading target bearing.

BEARING DEVIATION INDICATOR.

One of the units in an underwater sound system, serving to indicate the direction of an arriving echo with relation to true north or to some major axis of the ship.

BEARING RATE.

Rate of change of true bearing.

BEARING RESOLUTION.

Minimum angular separation in a horizontal plane between two targets at the same range that will allow an operator to obtain data on either individual target.

BEAT.

Periodic variation in amplitude set up by the phenomenon of beating; that is, the interference with each other of two waves of different frequencies.

BEAT FREQUENCY.

One of the two additional frequencies produced when two different frequencies are combined. One of these beat frequencies is the sum of the two original frequencies and the other is the difference between them.

BEAT FREQUENCY OSCILLATOR.

Oscillator which produces a desired frequency by combining two frequencies. The frequency may be an audio-frequency produced by combining two radio-frequencies, or it may be some desired radio-frequency, such as the intermediate-frequency of a superheterodyne circuit.

BEAT NOTE.

Frequency resulting from combining two different frequencies. It is numerically equal to the difference between these two frequencies.

BEAT RECEPTION.

Process of reception in which a received high frequency wave is combined in a non-linear device with a locally generated wave, with the result that in the output there are frequencies equal to the sum and difference of the combining frequencies. If the received waves are continuous waves of constant amplitude, as in telegraphy, it

is customary to adjust the locally generated frequency so that the difference of the frequencies is audible. If the received waves are modulated, the locally generated frequency is generally such that the difference frequency is superaudible and an additional operation is necessary to reproduce the original signal wave.

BEAT TONE.

Musical tone due to beats, produced by the heterodyning of two HF wave trains.

BEATING.

1. Phenomenon in which two or more periodic quantities of different frequencies add linearly to produce a resultant having pulsations of amplitude.
2. Combination of two or more frequencies to produce beats.

BEATING-IN.

1. Splicing, by hammering down the end of a lead sleeve so that it fits the cable sheath.
2. Interconnecting two transmitter oscillators and adjusting one until no throbbing is heard in a connected receiver. The oscillators are then at the same frequency.

BEATS.

Periodic variations that result from the superimposition of waves having different frequencies. The term is applied both to the linear addition of two waves, resulting in a periodic variation of amplitude, and to the non-linear addition of two waves, resulting in new frequencies, of which the most important usually are the sum and difference of the original frequencies.

BEAVER TAIL.

Medium range radar height-finder, AN/CPS-4. This set is air transportable and may be mounted on a vehicle, ground or tower. Operates in the 2700-2900 MC band and has a range of 90 miles. Peak power is 750 kilowatts. (Reference: BIG ABNER.)

BEL.

Unit of relative power expressing the relation between amounts of signal power and differences in sound-sensation levels. The number of

bels is equal to the common logarithm of the ratio of the two powers or sound levels involved. Two powers or levels differ by one bel when their actual ratio is 10:1.

BELL BOX.

Apparatus associated with a desk stand or hand telephone set, comprising a housing (usually arranged for wall mounting) within which are those components of the telephone set not contained in the desk stand or hand telephone set.

BELL CRANK.

Lever with two arms generally placed at right angles with a common fulcrum at their junction.

BELL TRANSFORMER.

Small iron-core transformer having a primary coil that connects to an ac primary line and a secondary coil that delivers 10 to 20 volts, for operation of a doorbell, buzzer, or chimes.

BELL WIRE.

Cotton-covered copper wire, usually number 18, used for doorbell and thermostat connections in homes and for similar low-voltage work.

BELLINI-TOSI DIRECTION FINDER.

Early radio direction finder that consists of two loop antennas at right angles to each other and connected to a goniometer.

BELT, BODY.

Heavy belt passed around the waist, equipped with D-rings for fastening the safety belt. Has loops or keepers for tools.

BELT, SAFETY.

Heavy, adjustable belt passed around a pole and snapped to the D-rings of the body belt.

BELT, TOOL.

Leather strap worn about the waist with loops and pockets for holding hand tools.

BEND.

Change in the direction of the longitudinal axis of a waveguide.

BENDER, CABLE.

Tool for putting curves or bends in cables when placing them in valuts, manholes, or when racking.

BENETO.

CW navigational system in which the distance to an aircraft is determined on the ground by a phase differential measurement of an audio signal transmitted from the ground and retransmitted by aircraft. Bearing information is obtained by ground direction finding of the aircraft signals.

BENT-SHANK NEEDLE.

Phonograph needle intended for use with heavy phonograph pickups because it lessens needle pressure on the record.

BETA.

1. Greek letter *B*, often used to designate angles or quantities.
2. Symbol used to denote B-quartz.
3. X-ray frequency.

BETA 57-1.

Code system, used in astronautics, for identifying earth satellites. This system was used in the Sputnik II satellite and attached rocket launching vehicle.

BETA PARTICLE.

Negatively charged particle emitted by certain radio active substances. The beta particle is a high-speed electron having energies such as would be obtained by accelerating an electron by a potential of ten thousand to several million volts. While beta particles are emitted by the nucleus it is believed that they are created (and immediately emitted) by a transformation in the nucleus.

BETA QUARTZ.

Name given to the high-temperature hexagonal modification of silica, stable above 573 degrees.

BETA RAYS.

1. Electrons given off by radioactive atoms.

2. Rays consisting of beta particles.

BETATRON.

Induction electron accelerator. It speeds electrons just as a cyclotron speeds positive particles.

BEVERAGE ANTENNA.

Directional antenna consisting of a very long wire, supported a few feet (up to 15) above the ground, running horizontally in the direction of the arrival of the incoming waves.

BEZEL.

Holder designed to receive and position the edges of a lens, window, or dial glass.

BFO (BEAT FREQUENCY OSCILLATOR).

Oscillator which produces an audio frequency by combining two other frequencies. This frequency may be an audio-frequency produced by combining two radio-frequencies, or it may be some desired radio-frequency, such as the intermediate-frequency of a superheterodyne circuit.

BIAS.

1. Electrical, mechanical, or magnetic force which is applied to a relay, vacuum tube, or other device, for the purpose of establishing an electrical or mechanical reference level for the operation of the device.
2. DC potential applied to the control grid of a vacuum tube.
3. Bias derived from a direct current, used on signaling or telegraph relays or electromagnets to secure desired time spacing of transitions from marking to spacing.
4. Method of restraining a relay armature, by means of spring tension, to secure a desired time spacing of transitions from marking to spacing.
5. Average dc voltage between the control grid and cathode of a vacuum tube.
6. Effect on teletypewriter signals produced by the electrical characteristics of the line and the equipment.
7. Energy applied to a relay to hold it in a given position.

8. Distortion produced by line bias.

CATHODE. Method of biasing a vacuum-tube by placing the biasing resistor in the common cathode-return circuit, making the cathode more positive, rather than the grid more negative, with respect to ground.

FIXED. Bias voltage of constant value, as one obtained from a battery, power supply, or generator.

GRID. DC voltage applied between the grid and the cathode of an electron tube.

RELAY. Bias produced by a spring or an electromagnet acting on the armature of the relay, which tends to hold the armature in a given position (usually the spacing condition on a teletypewriter).

SELF. Voltage developed as a result of the flow of vacuum-tube current through a resistor in a grid or cathode lead.

SIGNAL. Form of teletypewriter signal distortion brought about by the lengthening or shortening of pulses during transmission. When marking pulses are all lengthened, a marking signal bias results; when marking pulses are all shortened, a spacing signal bias results.

ZERO. 1. Condition in which there is no potential difference between the control grid and the cathode.

2. When the received teletypewriter signal is equal to the transmitted signal (neither longer nor shorter), the circuit is said to have zero bias.

BIAS CELL.

Dry cell used in the grid circuit of a vacuum tube to provide the required C bias voltage.

BIAS DISTORTION.

Uniform shifting of the beginning of all teletypewriter marking pulses from their proper positions in relation to the beginning of the start pulse.

BIAS METER.

Used in teletypewriter work for measuring signal bias directly in percent. A positive reading, on the meter indicates a marking signal bias; a negative reading on the meter indicates a spacing signal bias.

BIAS VOLTAGE.

Voltage applied or developed between two vacuum tube electrodes (generally the control grid and cathode) to influence the effect of the signal voltage in the input circuit of these two electrodes.

BIASED TELEPHONE RINGER.

Telephone ringer, the clapper driving element of which is normally held toward side by mechanical forces or by magnetic means, so that the ringer will only operate on half cycles of alternating current, or on electrical pulses in one direction.

BIASING RESISTOR.

Resistance so connected into a self-biasing vacuum tube circuit that it produces the voltage drop required to provide a desired biasing voltage.

BIAXIAL.

Having two axes.

BICONICAL ANTENNA.

Antenna formed by two conical conductors having a common axis and vertex, is excited at the vertex. When the vertex angle of one of the cones is 180° , the antenna is called a discone.

BIDIRECTIONAL.

Responsive in two opposite directions. An ordinary loop antenna is bidirectional because it has maximum response from the two opposite directions that are in the plane of the loop.

BIDIRECTIONAL ANTENNA.

Antenna having two directions of maximum response.

BIDIRECTIONAL CURRENT.

Current which has both positive and negative values.

BIDIRECTIONAL PULSES.

Pulses, some of which rise in one direction and the remainder in the other direction.

BIFILAR.

Transformers, inductors, and the like are said to be bifilar wound, when, to achieve a desired balance (similarity between winding), two conductors are wound simultaneously, side by side.

BIFILAR SUSPENSION.

Suspension of a body by two vertical wires or similar supports, providing considerable controlling torque.

BIFILAR WINDING.

Method of winding noninductive resistors. The wire is first doubled on itself, then wound double, starting from the loop.

BIFURCATED.

Single contact whose end is divided into two parts or is fork shaped.

BIG ABNER.

Medium range radar height-finder, AN/CPS-4. A smaller height-finder, the AN/TPS-10 is known as Little Abner. The AN/CPS-4 is air transportable and may be mounted on a vehicle, ground, or tower. It operates in the 2700-2900 MC band. Range is 90 miles and peak power is 750 kilowatts. (Reference: BEAVER TAIL.)

BIG PHOTO.

Aircraft of the Strategic Air Command participating in training missions with North American Air Defense Command.

BILATERAL.

Having, or arranged upon, two sides.

BILATERAL ANTENNA.

Antenna, such as a loop, having maximum response in exactly opposite directions (180° apart).

BILATERAL BEARING.

Bearing which indicates two possible directions of wave arrival. One of these is the true bearing and the other is a bearing displaced 180° from the true bearing.

BILATERAL CIRCUIT.

Circuit wherein equipment at opposite ends is managed, operated, and maintained by different services.

BILLBOARD ANTENNA.

Broadside array with flat reflectors.

BILLING PERIOD.

Period of service covered by the bill of a communication company.

BIMETALLIC STRIP.

Strip formed of two dissimilar metals welded together. The metals have different temperature coefficients of expansion, causing the strip to bend or curl when the temperature changes.

BIMORPH CELL.

Two crystal elements (usually rochelle salt) in rigid combination, arranged to act as a mechanical transformer in headphones, microphones, pick-ups, and loudspeakers.

BINARY.

Name of a number system used in electronic computers, whose successive digits are interpreted as coefficients of the successive powers of the base two.

BINARY CELL.

Elementary unit of storage which can be placed in either of two stable states.

BINARY CODE.

Code in which each element may be either of two distinct kinds of values; for example, the presence or absence of a pulse.

BINARY NUMBER SYSTEM.

Positional number system in which the successive digits are interpreted as coefficients of the successive powers of the base two (just as they are related to successive powers of the base ten in the decimal number system).

BINARY POINT.

In positional notation, the character, or the location of an implied symbol, which separates the integral part of a numerical expression from its

fractional part. For example, it is called the binary point in binary notation and the decimal point in decimal notation. If the location of the point is assumed to remain fixed with respect to one end of the numerical expressions, a fixed-point system is being used. If the location of the point does not remain fixed with respect to one end of the numerical expressions, but is regularly recalculated, then a floating-point system is being used.

Note: A fixed-point system usually locates the point by some convention, while a floating-point system usually locates the point by expressing a power of the base.

BINARY STAR.

Two stars revolving around a common center of gravity.

BINARY-CODED-DECIMAL SYSTEM.

System of number representation in which each decimal digit is represented by a group of binary digits.

BINAURAL.

Pertaining to the use of two ears of duplicating the effect of hearing with two ears.

BINAURAL EFFECT.

Effect which makes it possible for a person to determine the direction from which a sound is coming. Accomplished by distinguishing the difference in arrival time or intensity of sound at the ears.

BINDER.

1. Cement-like material used in carbon resistors for holding the carbon particles together and providing mechanical strength.
2. Resinous material used in phonograph records.

BINDING ENERGY.

Energy required to separate the positively and negatively charged parts of atoms or molecules.

BINDING POST.

Bolt and nut terminal for making temporary electrical connections.

BINOMIAL ARRAY.

Directional antenna array for reducing minor lobes and providing maximum response in two opposite directions.

BIOLOGICAL WARFARE.

1. Warfare waged by the employment of living organisms, toxic bacteriological products, and chemical plant-growth inhibitors to produce death or casualties in man, animals, or plants.

2. Defense against such war fare.

BIOLUMINESCENCE.

Emission of light by living organisms, as the firefly, certain fungi, and many marine forms.

BIOPHYSICS.

Term used in reference to the physical processes taking place in living organisms.

BIPOLAR.

Having two poles.

BIPOLAR ELECTRODE.

Electrode, without metallic connection with the current supply, one face of which acts as an anode surface and the opposite face as a cathode surface when an electric current is passed through the cell.

BIPOLAR MAGNETIC DRIVING UNIT.

Headphone or loudspeaker unit having two magnetic poles acting directly on a flexible iron diaphragm.

BIRDNESTING.

Clumping together of chaff dipoles after they have been dispensed from an aircraft.

BISCUIT.

Small slab of the stock material from which a record is pressed as it is prepared for use in the presses.

BISECTION.

Process used in preparing plain text for encryption. It consists of breaking the plain text of a message into two segments or portions usually of unequal length, transposing the segments so that the actual beginning and ending

of the message are buried and indicating the true beginning and ending in a distinctive manner.

BISMUTH SPIRAL METHOD.

Measurement of magnetic flux by observing the change in resistance of a flat spiral of bismuth wire when placed in an air gap or elsewhere in the magnetic circuit.

BIT. (BINARY DIGIT).

1. Single character of a language employing exactly two distinct kinds of characters.
2. Unit of storage capacity. The capacity, in binary digits of a storage device is the logarithm to the base two of the number of possible states of the device.
3. Unit of information content, equal to one binary decision, or the designation of one of two possible and equally likely values or states of anything used to store or convey information. A binary digit may be conveyed by one binary code element. One binary digit equals log of 2 to base 10 times one Hartley.

BIVALENT.

Substance with two chemical valences.

BIZMAC.

RCA Computer.

BJC-EB (BRITISH JOINT COMMUNICATIONS-ELECTRONICS BOARD).**BL (BOMBLINE).**

Line or boundary, usually marked by terrain features, pyrotechnics, or other devices, that marks the limit to or beyond which bombs may be dropped without endangering friendly ground forces, without causing undesired damage or loss. (Reference: BOMB SAFETY LINE, FORWARD BOMBLINES.)

BLACK.

Signal produced at any point in a facsimile system by the scanning of a selected area of subject copy having maximum density.

BLACK AND WHITE TRANSMISSION.

Transmission of a television signal wave which represents the brightness values in the picture, but not the chromaticity values.

BLACK BODY.

Theoretically perfect absorber and emitter of radiation.

BLACK SCOPE.

Cathode-ray tube operating at the threshold of luminescence when no video signals are being applied.

BLACK LEVEL.

Instantaneous amplitude of the television signal which corresponds to a black area in the received picture.

BLACK LIGHT.

Invisible light radiation. It may be either ultraviolet or infrared radiation, both of which are invisible.

BLACK SIGNAL.

Signal at any point in a facsimile system produced by the scanning of a maximum density area of the subject copy.

BLACK TRANSMISSION.

1. Form of transmission, in an amplitude-modulation facsimile system, in which the maximum transmitted power corresponds to the maximum density of the copy.
2. Form of transmission, in a frequency-modulation system, in which the lowest transmitted frequency corresponds to the maximum density of the copy.

BLACK-BODY RADIATION.

Radiation from a black body at a given temperature.

BLACKER-THAN-BLACK LEVEL.

Direct voltage value used in an electronic television system for control impulses. It is greater than the value representing black portions of the image.

BLACKMARI.

Air-to-air identification system developed by the

United Kingdom and similar in design to the US Navy's air-to-air system. This system is not compatible with the Air Force (Hughes Aircraft) air-to-air system.

BLACKOUT.

1. Interruption of radio communication due to excess absorption caused by solar flares. During severe blackouts, all frequencies above approximately 1,500 kc. are absorbed excessively in the daylight zone.
2. Passive defense that consists of interrupting all forms of communication or identification.
3. Temporary fadeout of vision, and/or consciousness due to effects of rapid acceleration or deceleration, decreasing the flow of blood to the brain.

BLADE.

Moving contact switch member which enters or embraces the contact clips.

BLADE GUIDE.

Attachment on a switch to assure proper alignment of blade and contact when closing the switch.

BLADE LATCH.

Latch used on a hook-operated switch to hold the switch blade in a closed position.

BLANK.

Result of the final cutting operation on a crystal.

BLANK GROOVE.

Groove upon which no modulation is inscribed.

BLANK HOLDER.

Thin circular holder composed of zinc or other material and perforated with square or other shaped holes which contain and hold the quartz blanks between the upper and lower laps in the lapping process.

BLANKETING.

Effect produced by an undesired signal so strong that it makes difficult or impossible the reception of a desired signal.

BLANKING.

Process of making a channel or device non-effective for a desired interval. In television, blanking is the substitution for the picture signal, during prescribed intervals, of a signal whose instantaneous amplitude is such as to make the return trace invisible. (Reference: GATING.)

BLANKING LEVEL.

Level in a composite picture signal that separates the range containing picture information from the range containing synchronizing information.

BLANKING PULSE.

Square wave (positive or negative) used to switch off a part of a television or radar set electronically for a predetermined length of time.

BLANKING SIGNAL.

Wave constituted of recurrent pulses, related in time to the scanning process, used to effect blanking.

BLASTING.

Distortion due to overloading of a part of a receiver, or public address amplifier.

BLEEDER.

Resistor connected across a power source to improve voltage regulation, to drain off the charge remaining in capacitors when the power is turned off, or to protect equipment from excessive voltage if the load is removed or substantially reduced.

BLEEDER CURRENT.

Current drawn continuously from a power supply to improve its voltage regulation or to increase the value of the voltage drop across a particular resistor.

BLEEDER RESISTOR.

1. Resistor which is used to draw a fixed current. Also used, as a safety measure, to discharge filter condensers after the circuit is deenergized.
2. Resistor placed in the power supply of a radio receiver or other electronic device to stabilize the voltage supply.

BLEEDING.

Appearance of drops of sap or wood preservative, particularly creosote, on the surface of a pole.

BLIND APPROACH BEACON SYSTEM.

Pulse-type ground-based navigation beacon used for runway approach at airfields primarily in the United Kingdom.

BLIND LANDING.

Landing with no external visibility. All flight, approach, and landing data used by the pilot are obtained from instruments in the aircraft and from radio-direction finding devices on the ground.

BLIND ZONE.

Area from which echoes cannot be received; generally, an area shielded from the transmitter by some natural obstruction and therefore from which there can be no return.

BLINKING.

Distinctive signal used in the LORAN system to indicate unusable pulses.

BLIP.

Spot of light or base-line irregularity on a cathode-ray display representing the radar reflection from an object.

BLIP SCAN RATIO.

Ratio between a single recognizable blip on a cathode-ray display and the number of scans necessary to produce it.

BLISTER.

Term used to refer to the housing of an airborne radar antenna.

BLOCK.

Group of words, introduced to an electronic computer, considered as a unit.

BLOCK DIAGRAM.

1. Diagram in which the essential units of any system are drawn in the form of blocks, and their relation to each other indicated by appropriate connecting lines.

2. Diagram in which the principal divisions or sections of a circuit are indicated by geometric

figures and the path of the signal or energy by lines and/or arrows.

DISTRIBUTING. Set of punchings, set in hard rubber or other insulating material, mounted on a piece of wood. This assembly is rigidly fastened as to a frame and usually wired permanently on one side, permitting wires to be connected and changed on the other.

PROTECTOR. Rectangular piece of carbon, bakelite with a metal insert, or porcelain with a carbon insert which, in combination with each other, make one element of a protector. They form a gap which will break down and provide a path to ground for voltages over 350 volts.

TERMINAL. Set of punchings, set in hard rubber or other insulating material, mounted on a piece of wood. This assembly is rigidly fastened as to a frame and usually wired permanently on one side, permitting wires to be connected and changed on the other.

WOODEN. Piece of wood simulating carbon blocks used in lightning arresters to keep the springs from grounding when protection is not required.

BLOCK PROTECTOR

Rectangular piece of carbon, bakelite with a metal insert, or porcelain with a carbon insert which, in combination with each other, make one element of a protector. They form a gap which will break down and provide a path to ground for voltages over 350 volts.

BLOCK TELEVISION.

Type of aerial television. The block system is a smaller installation of the ring system for use over a shorter distance.

BLOCK-GRID KEYING.

Method of keying a continuous-wave transmitter by operating the amplifier stage as an electronic switch. During the spacing interval when the key is open, the bias on the control grid becomes highly negative and prevents the flow of plate current so that the tube has no output; during the marking interval when the key is closed, this bias is removed and full plate current flows.

BLOCKED IMPEDANCE.

Blocked impedance of a transducer is the impedance measured at the input when the impedance of the output system is made infinite. (Reference: DAMPENED IMPEDANCE.)

BLOCKED RESISTANCE.

Resistance of an AF transducer when its moving elements are blocked so they cannot move. It represents the resistance due only to electrical losses.

BLOCKING.

Application of extremely high negative grid bias to a vacuum tube, thus reducing the plate current to zero.

BLOCKING CAPACITOR.

Capacitor which introduces a comparatively high series impedance for limiting the current flow of low-frequency alternating current or direct current without materially affecting the flow of high-frequency alternating current.

BLOCKING LAYER.

Surface of contact between a metal and semiconductor. It acts as a rectifier of alternating currents. Some barrier layers when illuminated, generate a voltage through photovoltaic action. The junction between the copper and cuprous oxide in the photoelectric cell is a barrier layer. (Reference: BARRIER LAYER.)

BLOCKING OSCILLATOR.

Relaxation oscillator using inductive feedback with its period determined by the time constant of the grid resistor capacitor combination.

BLOCKING OSCILLATOR DRIVER.

Circuit which develops a square pulse used to drive the modulator tubes, and usually contains a line-controlled blocking oscillator that shapes the pulse into the square wave.

BLOCKING-LAYER CELL.

Type of photovoltaic cell in which light acting on the surface of contact between layers of copper and cuprous oxide causes an electromotive force to be produced. (Reference: BARRIER-LAYER CELL.)

BLOOM.

Glare caused by an object reflecting light into the lens of the camera.

BLOOMING.

Expansion of the spot on a cathode-ray tube due to maladjustment of bias, focus, and intensity. Also the excessive brightness on an intensity-modulated radar scope caused by the high intensity of concentrated signals.

BLOOPER.

Oscillating radio receiver that is radiating an undesired signal.

BLOSSOM.

Dispersal of chaff to produce optimum echo.

BLOW.

Opening of a circuit because of excess current, particularly when the current is heavy and a melting or breakdown point is reached.

BLOWER.

Motor-driven fan used to supply air for cooling purposes.

BLOWER ALARM.

Indicator light which illuminates if unit overheats, due to blower failure.

BLOWHOLE.

Gas cavity in a metal casting caused either by evolution of gas released from the solidifying metal, or by steam or air entrapped essentially from the mold.

BLOWN FUSE INDICATOR.

Special design warning light across a fuse, which illuminates when the fuse is blown.

BLOWTORCH.

Portable device for producing intense local heat.

BLUE BRITTLENESS.

Apparent change of the physical properties of steel when heated between 200 and 400°C. In this temperature range, the malleability of the steel decreases and a blue oxide film forms on the surface.

BLUE GLOW.

Glow normally seen in vacuum tubes containing mercury vapor due to ionization of the molecules of mercury vapor.

BLUE NEEDLES.

Term applied in the grading of quartz which shows up in a mineral oil bath with a bluish-white color under the arc lamp.

BLUE STREAK REQUEST.

High-priority requisition of an air depot to the Air Materiel Command for projects or programs specifically authorized by Headquarters, USAF; or by the Commanding General, AMC.

BLUEING.

Operation of heating, to a temperature of about 200°C., steel which has been subjected to a pickling operation. Blueing is also the term used for producing an oxide film on the surface of steel.

BOARD.

1. Switchboard equipped with testing apparatus, so arranged that connections can be made to telephone lines or central office equipment for testing purposes.

2. Commercial switchboard equipped with apparatus for making tests and for temporary interconnection and rearrangement of circuits.

FORMING. Board used to form cable terminations at jack mountings, relay mounting plates, terminal strips or similar units in which the cable skimmers are brought out and turned at a series of nails or holes in the board at the location of the apparatus preparatory to sewing the form.

BOB. (BUREAU OF THE BUDGET).**BODY.**

Body is a definite portion of matter considered separately from other matter.

BODY BELT.

Heavy belt passed around the waist, equipped

with D-rings for fastening the safety belt. Has loops or keeper for tools.

BODY CAPACITANCE.

Capacitance introduced into an electrical circuit by the proximity of the human body.

BOEHME EQUIPMENT.

1. Used for sending International Morse Code characters by passing Wheatstone tape through a keying head.

2. Used for recording International Morse Code characters by ink syphon equipment on a moving paper tape.

BOHR ATOM.

Atom, as conceived by Bohr and Rutherford, consisting of a positive nucleus about which circulates a number of orbital electrons.

BOLDMETER.

Device whose resistance changes in accordance with changes in temperature used in the measurement of microwave energy. It contains a resistive element, the resistance of which changes as a result of heating by RF power. One type of bold-meter is the barretter, which uses a short length of resistive wire; another type is the thermistor which uses a small mass of resistive material.

BOLTZMANN'S CONSTANT.

Ratio of mean total energy of a molecule to its absolute temperature. The value is 1.375×10^{-16} ergs per degree.

BOM (BILL OF MATERIAL).**BOM (BOMBARDMENT).**

1. Process of directing high-speed electrons at an electrode, causing secondary emission of electrons, fluorescence, disintegration, or production of X-rays.

2. Process of directing high-speed particles at atoms to cause ionization or transmutation.

BOM (BOMBER).

Airplane specifically designed to carry and drop bombs.

BOM (BOMBING).

Action of dropping bombs from an aircraft with the purpose of hitting a target.

BOMARC.

Surface-to-air guided missile designated as the IM-99 or F-99. It has a gross weight of 8500 pounds, and a maximum speed of Mach 2.5. The BOMARC is intended for air defense of the United States and forward areas. It is a pilotless interceptor type which may ultimately carry air-to-air missiles for launching and then return to base. The wing span is 36 feet; length is 66 feet; and height is 16 feet. Propulsion is by two ramjet engines solid propellant internal rocket booster. This missile will operate up to 60,000 ft. altitude with a range of over 100 miles. Guidance is by means of radar, infrared homing, or command guidance.

BOMB.

1. Explosive or other lethal agent together with its container or holder, which is planted or thrown by hand, dropped from an aircraft, or projected by some other slow-speed device and used to destroy, damage, injure, or kill.
2. Similar to this object in appearance, operation, or effect, a leaflet bomb, smoke bomb, photo-flash bomb, a bomb-like container or chamber, etc.
3. To drop a bomb or bombs on a target, as a city, railyard, or body of troops.

BOMB RELEASE LINE.

Imaginary line around a target complex at which point a hostile bomber may be expected to release its first bomb.

BOMB SAFETY LINE.

Bomb line behind which bombs should not be dropped in order to protect ground forces. (Reference: BOMBLINE.)

BOMBER.

CAA designation for scheduled broadcast station. (broadcasts weather at 15 and 45 minutes

after the hour; Air Force broadcasts, generally 29 minutes.)

BOMBING.

Action of dropping bombs from an aircraft with the purpose of hitting a target.

BOMBING AREA.

Bombing a target of a general area rather than a small or pinpoint target.

BOMBLINE.

Line or boundary, usually by terrain features, pyrotechnics, or other, that marks the limit to or beyond which bombs may be dropped without causing undesired damage or loss. (Reference: BOMB SAFETY).

FORWARD. Line in advance of the bomblines, beyond which air units specifically engaged in close air support do not operate unless ordered by the Air Commander.

STRATEGIC. Bomblines used to indicate the geographical limits to which strategic bombing may be carried out without resulting in undesired damage or loss.

BOND.

Electrical interconnection made with low-resistance material between chassis, metal shield cans, cable shielding braid, and other supposedly equipotential points, in order to eliminate undesirable interaction resulting from high-impedance paths between them.

BONDING.

1. Maintaining electrical continuity from one element to another. Usually the continuity is immediately or eventually to earth.
2. Connecting together electrically, all the metal parts of an automobile or airplane.
3. Connecting the shields of radio parts, or connecting these parts to the chassis.

BONE-CONDUCTION PERCEPTION.

Perception in which the sound is conducted to

the inner ear by the cranial bones rather than through the ossicles from the outer ear.

BOOK CAPACITOR.

Two plate trimmer capacitor having the plates hinged together like the pages of a book. The capacitance is varied by changing the angle between the plates.

BOOK MESSAGE.

Book message is one which is destined for two or more addressees and is of such nature that the originator considers that no addressees need to be informed of any other addressees. Each addressee must be indicated as action or information.

BOOM.

Mechanical support for a microphone, used in a television or motion-picture studio to suspend the microphone within range of the actors but above the field of view of the camera.

BOOST CHARGE.

Partial charge of a storage battery, usually at a high rate for a short period.

BOOSTER.

1. Small generator inserted in series or parallel with a larger generator in order to maintain normal voltage output under heavy loads.
2. Radio station which acts as an intermediate station in transmitting communication signals from one fixed station to another.
3. Propulsion unit, usually a rocket, which serves quickly to accelerate the speed of a plane, missile, or rocket to take-off.

BOOTSTRAP CIRCUIT.

Amplifier in which the output load impedance appears between the negative end of the plate supply and the cathode of the amplifier tube, the signal voltage being applied between the grid and the cathode. The bootstrap circuit differs from a cathode follower in that amplification is achieved by applying the input signal between grid and cathode where it does not suffer the degeneration caused by the output voltage appearing across the cathode resistor.

BOOTSTRAP DRIVER.

Electronic circuit used to produce a square pulse to drive the modulator tube. The duration of the square pulse is determined by a pulse-forming line.

BORE.

Interior diameter of an engine cylinder.

BORE SIGHT.

Sighting device consisting of a breech element and a muzzle element which, when inserted in a gun, is used to determine the axis of the bore and the alignment of other sighting equipment with the axis of the bore.

BORER, INCREMENT.

Tool for taking wood samples from a pole to determine depth of creosote treatment or extent of rot.

BORON OR BORON HYDRIDE.

High energy missile and rocket fuel constituent; one of the so called zip or exotic fuels.

BORROW.

Receive with the implied or expressed intention of returning or giving an equivalent.

BOUND CHARGE.

Term used to denote the charge remaining in the dielectric of a capacitor after discharge; the residual charge.

BOUNDARY.

Lines drawn between specific geographic positions which indicate the area of responsibility of air-defense units.

BOUNDARY LIGHT.

One of the series of lights used to indicate the limits of the landing area of a landing field.

BOUNDARY MARKER.

Marker, for aircraft, which is installed near the approach end of a landing runway and approximately in the localizer course line.

BOWING.

Deflection of a cable from its straight path, due to excessive length in a section or span.

BPC (USAF PLANNING-BUDGETING PROGRAM COMMUNICATIONS-ELECTRONICS).

BRACE, CROSS ARM.

Steel strap mounted from pole to cross arm to hold the cross arm in position.

BRACE POLE.

Pole set at an angle and bolted to a line pole that cannot be guyed.

BRACKETS, POLE.

Wooden wedges designed to be nailed to a pole and made to hold an insulator on which a wire may be tied.

BRADLEY DETECTOR.

Single-stage, locked-in oscillator type of FM detector (uses a special heptode vacuum tube).

BRAGG ANGLE.

Glancing angle for X-rays at the reflecting planes of a crystal. Used in X-ray orientation of quartz crystals being cut for radio use.

BRAGG'S LAW.

Expression specifying the condition under which a system of parallel atomic layers in a crystal will reflect a beam of X-ray with maximum intensity.

BRAIN.

Rocket or missile guidance system.

BRAKING ELLIPSES.

Series of orbital approaches to the earth's or any other planet's atmosphere for the purpose of slowing up a rocket preparatory to landing.

BRANCH.

1. Section in an electronic network, between two adjacent branch points.
2. Major functional subdivision in a combat or direction center. (Reference: CONDITIONAL JUMP.)

BRANCH CIRCUIT.

Portion, in interior wiring, of a wiring system extending beyond the final overload protective device of the circuit.

BRANCH JOINT.

Joint used for connecting a branch conductor or cable to a main conductor or cable, where the latter continues beyond the branch.

BRANCH POINT.

Junction, in an electrical network, where more than two conductors meet.

BRANCH-CIRCUIT DISTRIBUTOR CENTER.

Distribution center at which branch circuits are supplied.

BRASS.

Metal made of alloying copper and zinc in various proportions.

BRASS BELL.

Classified definition. (Reference: AFM 100-50.)

BRAUN TUBE.

Early type of cathode-ray oscilloscope tube.

BRAZING.

Joining two metal objects by using a relatively infusible hard solder and direct heat.

BREADBOARD.

Laboratory idiom for an experimental circuit setup exposed on a board for portability and ease of assembly or disassembly.

BREADBOARD CONSTRUCTION.

Arrangement in which circuit components are fastened temporarily to a flat surface and wired for experimental work.

BREADBOARD MODEL.

Assembly of preliminary circuits and parts to prove the feasibility of a device, circuits, equipment, system or principle in rough or breadboard form, without regard to the eventual overall design or form of parts.

BREAK.

1. Break, in a communication circuit, is for the receiving operator or listening subscriber to interrupt the sending operator or talking subscriber and take control of the circuit. The term is used especially in connection with half-duplex telegraph circuits and two-way telephone circuits equipped with voice-operated devices.

2. Minimum distance, in a circuit opening device, between the stationary and movable contacts occurs when these contacts are in the open position.

3. Figure represented on the oscilloscope of a radar caused by the echo from an aircraft or other reflecting object.

PERCENT. Percentage used in dial pulse testing. It is a percentage expression of the period of time the dial circuit stands open compared to the total time of the dial signal.

BREAK CONTACT.

Contact of a switching device which opens a circuit upon the operation of the device (normally closed).

BREAK PERIOD.

Time interval, of a dial telephone, during which the circuit contacts are open.

BREAK POINT.

Place in a routine at which a special instruction is inserted which, if desired, will cause a digital computer to stop for a visual check of progress.

BREAK-IN KEYING.

1. Method of operating a continuous-wave radio telegraph communication system in which the receiver is capable of receiving signals during transmission of spacing intervals.

2. Method whereby a telegraph station breaks into the transmission being received from another station.

BREAK-IN OPERATION.

Method of radio communication in which it is possible for the receiving operator to interrupt or break into the transmission at any time.

BREAK-IN RELAY.

Relay used in a radio transmitter for break-in operation, automatically permitting reception of incoming signals during keying intervals.

BREAKDOWN.

Failure of insulation for any reason. Defective insulation may be detected by applying an excessive voltage and observing when and where

failure occurs when used; this operation is called breaking-down.

BREAKDOWN TORQUE.

Maximum torque an electric motor will develop with rated voltage applied at rated frequency, without an abrupt drop in speed.

BREAKDOWN VOLTAGE.

Voltage at which an insulator or dielectric ruptures, or at which ionization and conduction take place in a gas or vapor.

BREAKER, CIRCUIT.

Automatic device which interrupts the flow of current in a continuous circuit when there is a predetermined deviation of current, voltage, or impedance from a standard value.

BREAKER POINT.

Transmission system level at which there occurs an abrupt change in distortion or noise which renders operation unsatisfactory.

BREIT AND TUVE THEOREM.

Relationship between the equivalent triangular path for sky-wave propagation and transmission distance.

BREVITY CODE.

Code which has as its sole purpose the shortening of messages rather than the concealment of their content.

BREWSTER ANGLE.

Angle of incidence at which a vertically polarized wave (a wave polarized in the plane of incidence) undergoes a phase shift of 90° reflection from the surface.

BRG (BEARING).

1. Relative position of, or direction taken by, an aircraft, bomb, etc., with respect to a point and line of reference in a horizontal plane, as to a compass point and line.

2. Specifically the position or direction of an object relative to a line between the observer and true north or magnetic north.

BRIDGE.

1. Shunt path.

2. Device which is used for electrical measurement of impedance, etc., by comparison with known values.

3. Electrical network usually consisting of four branches; one pair of diagonally opposite corners is connected to the input and the other pair to the output circuit.

CAPACITY. Instrument using a modification of the Wheatstone bridge arrangement for measuring electrical charge capabilities in unit values of farads, microfarads, or micro-microfarads.

IMPEDANCE. Circuit used to measure the combined resistance and inductance of a device.

SLIDE-WIRE. Simplified form of Wheatstone bridge in which the position of a slider on a resistance wire determines the resistance ratio.

WHEATSTONE. Null-type resistance-measuring circuit in which resistance is measured by direct comparison with a standard resistance.

WIEN. Network of resistors and capacitors which has voltage characteristics with respect to frequency similar to those of a tuned inductance-capacitance circuit.

BRIDGE CIRCUIT.

Network which is so arranged that when an electromotive force is present in one branch, the response of a suitable detecting device in another branch may be zeroed by a suitable adjustment of the electrical constants of still other branches.

BRIDGE DUPLEX SYSTEM.

Telegraphy duplex system based on the Wheatstone bridge principle in which a substantial neutrality of the receiving apparatus to the sent currents is obtained by an impedance balance. Received currents pass through the receiving relay which is bridged between the points which are equipotential for the sent currents.

BRIDGE RECTIFIER.

Full-wave rectifier with four elements connected in a bridge circuit so that direct voltage is ob-

tained from one pair of opposite junctions when alternating voltage is applied to the other pair.

BRIDGE TRANSITION.

Method of changing the connection of motors from series to parallel in which all of the motors carry the same amount of current through the transfer due to the Wheatstone bridge connection of motors and resistors.

BRIDGED CIRCUIT.

Circuit which is shunted.

BRIDGED T-NETWORK.

Network with the two series impedance of the T, bridged by a fourth impedance.

BRIDGED TAP.

Portion of a cable pair connected to a circuit which is not a part of the useful path.

BRIDGING.

Composing a bridge network.

BRIDGING CONNECTION.

Parallel connection by means of which some of the signal energy in a circuit may be withdrawn.

BRIDGING CONNECTOR.

Screw fastener for joining drop, bridle, or other wires to open-wire conductors, or to fasten two open wires at a test point.

BRIDGING LOSS.

Loss resulting from bridging an impedance across a transmission system. It is the ratio of the signal power delivered to that part of the system following the bridging point, and measured before the bridging, to the signal power delivered to the same part after the bridging.

BRIDLE.

Tension member which extends longitudinally between supporting structures and is attached to a catenary system or direct-suspension system at points between supports.

BRIDLE WIRE.

Insulated wire for connecting conductors of an open wire line to associated pole mounted apparatus.

BRIDLING.

Insulated twisted pair wire used on a pole or a cable terminal to connect wire together or to connect line wires to cable pairs.

BRIGHTNESS.

Attribute of visual perception in accordance with which an area appears to emit more or less light. Used with cathode-ray tubes.

BRIGHTNESS OF IMAGE.

Term used to denote the amount of light transmitted by an optical system to give definition to the image seen by the observer.

BRILLIANCE.

1. Degree of brightness and clarity in a reproduced cathode-ray tube.
2. Degree to which the higher audio frequencies sound like the original when reproduced by a receiver or public address amplifier.

BRILLIANCE CONTROL.

Control, associated with cathode-ray tubes, by which the intensity of the electron beam and hence the amount of light generated by the fluorescent screen is controlled. Generally the control adjusts the grid bias of the tube.

BRILLIANCE (INTENSITY) MODULATION.

Control of the brilliance of the trace on the screen of a cathode-ray tube in conformity with the signal.

BRILLIANT.

Term applied to sound reproduction in which high frequencies are properly reproduced.

BRITISH BROADCASTING CORPORATION.

Government-owned corporation in charge of all radio broadcasting in Great Britain, financed by license fees collected from each radio-receiver owner, and carries no commercial programs.

BRITISH THERMAL UNIT.

Quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit. The corresponding Metric unit is the Calorie.

BRL (BOMB RELEASE LINE).

Imaginary line around a target complex at which point a hostile bomber may be expected to release its first bomb.

BROAD.

Responding to a wide range of frequencies. Usually applied to tuned circuits.

BROAD BAND.

Having a wider frequency response than the normal type of circuit at the corresponding mid-band frequency.

BROAD TUNING.

Condition in which two or more radio stations are heard at a single setting of the tuning dial of a receiver, generally due to poor selectivity in the tuning circuits of the receiver.

BROAD-BAND CARRIER SYSTEM.

Carrier system which is capable of providing 12 or more telephone channels.

BROADCAST.

Radio transmission of messages for which receiving stations make no receipt.

BROADCAST BAND.

Band of frequencies between 550 and 1,600 kilocycles.

BROADCAST CONTROL.

Control exercised by an intercept director transmitting the location of hostile flights to an interceptor pilot who conducts an interception without further direction.

BROADCAST CONTROLLED AIR INTERCEPTION.

Interception in which the interceptor is given the area of interception by a surface or air station and effects interception without further control.

BROADCAST METHOD.

Method of transmitting messages or information to a number of receiving stations which make no receipt.

BROADCAST TRANSMISSION.

Radio transmission to an unlimited number of receiving locations.

BROADCASTING.

Radio transmission, intended for general reception.

BROADCASTING SERVICE.

Radio communication service of transmissions to be received directly by the general public. This service may include transmissions of sound or transmissions by television, facsimile or other means.

BROADCASTING STATION.

Station in the broadcasting service.

BROADSIDE ARRAY.

Antenna array in which direction of maximum radiation is perpendicular to the line or plane of the array.

BROFICON (BROADCAST FIGHTER CONTROL).

System for the transmission of air-defense data to airborne interceptors, using commercial radio broadcasting facilities.

BRONZE.

Alloy of copper and tin.

BRUSH.

1. Conductor, such as a metal or carbon block, serving to maintain electric contact between stationary and moving parts of a generator or motor.
2. Moving member (wiper) of a selector, or other similar device, in communication practice, which makes contact with the terminals of a bank.

BRUSH DISCHARGE.

Luminous electrical discharge consisting of visible streams of charged particles moving through the air between the terminals of a static machine or other high-frequency high-voltage source.

BRUSH HOLDER.

Device, often adjustable, that holds a brush in the proper position against a commutator or slipring and applies the correct pressure to the brush.

BRUSH HOLDER STUD.

Intermediate support between the brush holder and the brush yoke.

BRUSH, TERMINAL.

Brush with long bristles for cleaning fuses and terminals in a terminal box.

BRUSH YOKE.

Rocker arm, ring, quadrant or other adjustable support for maintaining the brush holders or brush-holder studs in their relative positions.

BRUTE-FORCE FILTER.

Type of power-pack filter depending on large values of capacitance and inductance to smooth out pulsations, rather than on resonant effects of tuned filters.

BSA (BLUE STREAK REQUEST).

High-priority requisition of an air depot to the Air Materiel Command for projects or programs specifically authorized by Headquarters, USAF; or by the Commanding General, AMC.

BSE (BASE SUPPORT EQUIPMENT).

That equipment provided a base or organization, in addition to unit essential equipment, to enable the base to perform its assigned mission.

BTO (BOMBING THROUGH OVERCAST).

Btu (BRITISH THERMAL UNIT).

Quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit. The corresponding Metric unit is the Calorie.

BU (BUREAU).

1. Government department or office, or one of its subdivisions, for the transaction of business.
2. This abbreviation (BU) in government usage is usually used in conjunction with the preposition (of) as in BuAer meaning Bureau of aeronautics.

BUCK.

Oppose, as one voltage bucking another.

BUCKING COIL.

Coil connected and positioned in such a way that its magnetic field opposes the magnetic field of another coil. The hum-bucking coil of an electrodynamic loudspeaker is an example.

BUCKING VOLTAGE.

Opposing voltage, have opposite polarity to that of another voltage against which it acts.

BUCKLING.

Warping of the plates of a battery due to an excessively high rate of charge or discharge.

BUFFER.

1. Circuit or component which isolates one electrical circuit from another. Usually refers to electron tube amplifiers used for this purpose.

2. Vacuum tube stage used chiefly to prevent undesirable interaction between two other stages. In a transmitter, it generally follows the master-oscillator stage.

3. Isolating circuit in an electronic computer, used to avoid reaction of a driven circuit on the corresponding driving circuit.

4. Storage device used to compensate for a difference in rate of flow of information or time or occurrence of events when transmitting information from one device to another.

BUFFER AMPLIFIER.

Amplifier designed to isolate a preceding circuit from the effects of a following or proceeding circuit.

BUFFER CAPACITOR.

Capacitor connected across the secondary of a vibrator transformer or between the anode and cathode of a cold-cathode rectifier tube to suppress voltage surges that might otherwise damage other parts in the circuit.

BUFFER STAGE. (Reference: BUFFER.)**BUG.**

1. Semiautomatic telegraph sending key in which movement of a lever to one side produces a series of correctly spaced dots and movement to the other side produces a single dash.

2. Dial used on echo ranging and radar equipment to indicate true bearing of the projector, or the position of the projector or antenna with respect to the course of a ship or aircraft.

3. Defect or imperfection present in, or characteristics of, that equipment.

BUILDING OUT.

Addition to an electric structure of an element or elements electrically similar to an element or elements of the structure, in order to bring a certain property or characteristic to a desired value.

BUILDING-OUT CAPACITOR.

Capacitor employed to increase the capacitance of an electric structure to a desired value.

BUILDING-OUT CIRCUIT.

Short section of transmission line, or a network which is shunted across a transmission line, for the purpose of impedance matching.

BUILDING-OUT NETWORK.

Network designed to be connected to a basic network so that the combination will simulate the sending-end impedance, neglecting dissipation, of a line having a termination other than that for which the basic network was designed.

BUILDING-OUT SECTION.

Short section of transmission line, either open or short-circuited at the far end, shunted across another transmission line for use on an impedance-matching transformer.

BUILDING-UP.

Gradual increase in magnetic field strength in a self-excited generator from the residual magnetism value to the normal operation value produced when normal field current is flowing. The residual magnetism produces the small initial voltage that starts the building-up process.

BULB.

Term loosely used to specify the glass envelope that incloses an incandescent lamp or an electronic tube.

BULL HORN.

High power directional loudspeaker.

BULLPUP.

Air-to-air surface missile developed for the Navy. Nomenclature is XASM-N-7. Length is 11 feet,

diameter one foot, and it is powered by a solid propellant rocket motor.

BUMBLEBEE.

Guided missile identical with TERRIER but with a different guidance principle.

BUNCHED PAIR.

Group of pairs tied together or otherwise associated for identification.

BUNCHER.

1. Input resonant cavity in a conventional klystron oscillator.
2. Electrode of a velocity-modulated tube which concentrates the electrons in the constant-current electron beam into bunches.

BUNCHER RESONATOR.

Input cavity resonator in a velocity-modulated tube. It serves to modify the velocity of the electrons in the beam.

BUNCHING.

1. Grouping pairs together for identification and testing.
2. Condition in a vacuum tube where the electron flow is in groups rather than a continuous uniform flow.

BUNCHING PARAMETER.

Single term that combines the effect of a number of factors which determine the theoretical operation of a klystron.

BUNCHING VOLTAGE.

RF voltage between the grids of the buncher resonator in a velocity-modulated tube such as a klystron. Generally, the term implies the peak value of this oscillating voltage.

BUNSEN CELL.

Primary cell having a zinc negative electrode immersed in sulphuric acid and a positive carbon electrode immersed in nitric acid, with the two liquids separated by a porous cup.

BURIED CABLE.

Cable installed under the surface of the ground.

BURNISHING.

Process of turning a thin edge of metal over the beveled edge of a lens to hold it in place in its cell.

BURNISHING SURFACE.

Portion of the cutting stylus of a burnishing tool, directly behind the cutting edge, which smooths the groove.

BURNISHING TOOL.

1. Stylus sometimes used to smooth the groove of a recording.
2. Tool used to restore the surface of relay contacts.

BURNOUT.

End of power phase of a rocket engine.

BURST.

1. Sudden increase in the strength of a signal.
2. Cosmic-ray effect upon matter, causing a sudden intense ionization that often gives rise to great numbers of ion pairs at once. (Reference: COLOR BURST.)

BURST PEDESTAL.

Rectangular pulse like television signal which may be part of the color burst. The amplitude of the color burst pedestal is measured from the ac axis of the sinewave portion to the horizontal pedestal.

BURY.

Placing specified elements of a message in other than their usual place, by bisection or other procedure.

BUS.

1. Term used to specify an uninsulated conductor (a bar or wire); may be solid, hollow, square, or round.
2. Sometimes used to specify a busbar.
3. One or more conductors of an electron computer which are used as a path transmitting information from any of several sources to any of several destinations.

BUS REACTOR.

Current-limiting reactor for connection between two different buses or two sections of the same bus for the purpose of limiting and localizing the disturbance due to a fault on either bus.

BUSBAR.

Heavy copper strip or bar used on switchboards and in power plants to carry heavy currents.

BUSHING.

1. Lining for a hole intended to insulate and/or protect from abrasion, one or more conductors that pass through it.

2. Metallic sleeve or lining, usually removable, inserted in a body and used as a bearing for a shaft, to reduce friction.

BUSY TEST.

Test, in telephony, is made to find out whether certain facilities which may be desired, such as a subscriber line or trunk, are available for use.

BUTT.

Name given to the broken end of a prismatic quartz crystal opposite to the end terminated by rhombohedral faces.

BUTT JOINT.

Splice or connection formed by placing the ends of two conductors together and joining them by welding, brazing, or soldering.

BUTTERFLY CIRCUIT.

Frequency-determining element having no sliding contacts, used in UHF oscillator circuits to provide simultaneous change of both inductance and capacitance. It replaces conventional tuning capacitors and coils. The shape of the rotor resembles the opened wings of a butterfly.

BUTTERFLY RESONATOR.

Specially shaped tuning device that combines both inductance and capacitance in such a manner as to exhibit resonant properties at very-high and ultra-high frequencies, (characterized by a high tuning ratio and high Q).

BUTTON.

Metal container that holds the carbon granules

in a carbon microphone.

BUTTS CABLE.

End of the cable sheath at which the cable strippers start.

BUZZARD.

Ballistic range computer assembly, AN/APA-30. It is used with such airborne radar search sets as the AN/APS-3 and AN/APS-4 to provide the correct superelevation to an optical sight for firing of rockets or aircraft cannon. It feeds a range line to the radar scope for tracking. The aided tracking motor moves the range line and ballistic cone of the optical sight in synchronism by means of a servo system.

BUZZER.

Signaling device which produce a nonresonant sound by the vibration of an armature.

BW (BIOLOGICAL WARFARE).

1. Warfare waged by the employment of living organisms, toxic bacteriological products, and chemical plant-growth inhibitors to produce death or casualties in man, animals, or plants.

2. Defense against such warfare.

BX.

Armored cable.

BX CABLE.

Insulated wires in flexible metal tubing, used in wiring buildings, electrical equipment, or electronic equipment.

BYPASS.

Shunt path around some element or elements of a circuit.

BYPASS CAPACITOR.

Capacitor used to provide an ac path of comparatively low impedance around a circuit element.

BYPASS FILTER.

Filter which provides a low-attenuation path around some other equipment as, for instance, a carrier-frequency filter is used to bypass a physical telephone repeater station.

C

C (CABLE).

1. Specifically a rocket cable.
2. Stranded conductor (single-conductor cable) or a combination of conductors insulated from one another (multiple-conductor cable). The combination is sometimes encased in a lead sheath or covered with braided metal.

C (CENTIGRADE).

Metric temperature scale, in which the interval between the freezing and boiling points of water is divided into 100 equal parts or degrees, with 0° as the freezing point and 100° as the boiling point. Absolute zero is -273.1°C. To change degrees Centigrade to degrees Fahrenheit, multiply by 9/5 and add 32 to the result.

C (CHANGE).

To alter by substitution; to give up for something else; to give or take one for another. (Reference: RESCIND, SUPERSEDE.)

C (CONDUIT).

Tube of tile, steel, wood, or other material through which cables can be passed.

C (CONTROL TOWER).

CAA designation for a facility at an airfield, usually a tower with its special equipment, for controlling the movement of airdrome traffic and for controlling ground vehicles in the takeoff and landing area; the personnel operating this tower.

C-BATTERY.

Source of energy which supplies a voltage for biasing the grid of a vacuum tube. (Reference: BATTERY, GRID.)

C-BIAS.

Voltage applied to the control grid of an electron tube to give the grid a negative potential with respect to the cathode of the tube. (Reference: GRID BIAS.)

C-CARRIER SYSTEM.

Low-frequency carrier system which provides three telephone channels, utilizing frequencies up to about 32 kilocycles, by means of effective four-wire transmission on a single, open-wire pair.

C-E (COMMUNICATIONS-ELECTRONICS).

Field of specialization which covers radio and wire communications and electronic devices and their uses.

C-E (COMMUNICATIONS-ELECTRONICS) IMPLEMENTATION PLAN.

Comprehensive digest of facilities and equipment constituting major air command requirements within the communications-electronics area.

C-E (COMMUNICATIONS-ELECTRONICS) INSTALLATION SCHEDULE.

Installation schedule prepared by engineering agencies with the assistance of major air commands and based on priorities, availability of funds, availability of engineering and installation personnel, and/or associated construction programs.

C-E (COMMUNICATIONS-ELECTRONICS) MONITOR.

Qualified person designated to monitor supply of all ground radar and navigational aid equipment and parts within a supply activity at an electronics support base or depot.

C-INDICATOR OR SCOPE.

Radar indicator in which the signal appears as a bright spot with azimuth angle as the horizontal coordinate and elevation angle as the vertical coordinate.

C-POWER SUPPLY.

Power-supply device connected in the circuit between the cathode and grid of a vacuum tube, to supply grid bias.

C-SCAN.

(Reference: C-INDICATOR.)

C-SCOPE.

(Reference: C-INDICATOR.)

C&GCS (COMMAND AND GENERAL STAFF COLLEGE).**CA (CONTROL TOWER).**

1. Facility at an airfield, usually a tower, with its special equipment, for controlling the movement of airdrome traffic and for controlling ground vehicles in the takeoff and landing area.
2. Personnel operating this tower.

CAA (CIVIL AERONAUTICS ADMINISTRATION).

National agency established to encourage and foster the development of civil aeronautics and air commerce, and encourage the establishment of facilities for civil aeronautics.

**CAA (CIVIL AERONAUTICS ADMINISTRATION)
AIRWAYS OPERATIONS FACILITY.**

Civil Aeronautics Administration control tower, air route traffic control center, or communications station.

CAB (CIVIL AERONAUTICS BOARD).

Board within the framework of the Department of Commerce that issues certificates to civil airlines, fixes rates, promulgates air safety standards and requirements for the airworthiness of aircraft, and investigates aircraft accidents.

CABINET, EQUIPMENT.

Case designed to house relays and other apparatus.

CABINET, KEY.

Case, installed on a customer's premises, to permit different lines to the central office to be connected to various telephone stations. It has signals to indicate originating calls and busy lines.

CABINET, TEST.

Box containing apparatus for trouble location and routine maintenance.

CABLE

Assembly of one or more conductors within an enveloping protective sheath so constructed as to permit use of conductors separately or in groups.

AERIAL. Cable connected to a pole or similar overhead structure.

ARMORED. Cable provided with a wrapping of metal, primarily for the purpose of mechanical protection.

BURIED. Cable installed under the surface of the ground.

BUTTS. End of the cable sheath at which the cable strippers start.

COAXIAL. Cable, used as a transmission line, consisting of one conductor, usually a small copper tube or wire within, and insulated from another conductor of larger diameter, usually copper tubing or copper braid. The outer conductor may or may not be grounded. Radiation from this type of line is practically zero. (Reference: CONCENTRIC LINE, COAXIAL LINE.)

COMBINATION. Cable having conductors grouped in both quads and pairs.

COMPOSITE. Cable in which conductors of different gages or types are combined under one sheath.

CORROSION PROOF. Cable with a special protective cover over the sheath to reduce damage from electrolysis.

DISTRIBUTION. Cable extending from a feeder cable into a specific area for the purpose of providing service to that area.

ENTRANCE. Cable which brings power from an outside power line into a building.

FANS. Method of rearranging the incoming multiple cables in a courier transfer station so that they are in proper order on the multiple shelf.

FEEDER. Cable extending from the central office along a primary route (main feeder cable) or from a main feeder cable along a secondary route (branch feeder cable). Provides connections to one or more distribution cables.

FORM. Method of sewing and dressing the skinners at cable terminations by means of which the leads for any single piece of apparatus are brought out at a separate stitch.

HOUSE. Distribution cable within the confines of a single building or a series of related buildings but excluding cable run from the point of entrance to a cross connecting box, terminal frame, or point of connection to a block cable.

INSIDE POWER. Insulated cable used for dc power distribution at central offices.

JUTE PROTECTED. Cable having the sheath covered by a wrapping of tarred jute or other fiber.

LASHED. Cable fastened to the supporting strand by a continuous spiral steel wire instead of by rings.

LEAD-COVERED. Cable with a lead sheath.

LOCAL. Hand made cable form for terminations of circuits at the attendant's switchboard, at unit equipments, and other locations where wiring is run inside the section or unit.

PAIRED. Cable in which the single conductors are twisted together in groups of two.

POWER. Rubber insulated conductors for the power, battery and ringing leads of an office.

POWER LEAD COVERED. Lead sheathed, rubber insulated power cable used in damp locations.

PRIMARY POWER. Power service cables connecting the outside power source to the main office switch and metering equipment.

PROTECTIVE. Small gage quadded cable used in toll cables to serve as fuses; usually at building entrances.

QUADEDDED. Cable in which some of the conductors are arranged in the form of quads.

RISER. Vertical portion of a house cable extending from one floor to another.

STUB. Short extension from a principal cable. The end is often sealed until it is used at a later date. Pairs in the stub are referred to as stubbed out pairs.

SUBMARINE. Cable designed for service under water.

TAPE ARMORED. Cable with an overlapping wrapping of flat steel tapes to prevent damage.

TIE. 1. Cable between two distributing frames or distributing points.

2. Cable between two private branch exchanges.

3. Cable between PBX switchboard and main office.

4. Cable connecting two other cables.

TIP. Cable having the conductors insulated with silk and cotton and used to bring outside cables into a building.

TIPPING. Wool, or silk and cotton insulated cable with a lead sheath, which is spliced to the paper-insulated outside plant cable in the cable vault for termination of the vertical manual direction finder.

TOLL. Cable in which all the pairs are used for toll circuits.

TRUNK. Cable used for inter-office connections.

UNDERGROUND. Cable installed beneath the surface of the ground.

CABLE BENDER.

Tool for putting curves or bends in cables when placing them in vaults, manholes, or when rack-ing.

CABLE BOX.

Box in which cable pairs are terminated.

CABLE BRANCH.

Cable which leaves a main cable branch to reach some secondary point.

CABLE CAR.

Seat suspended from two wheels to permit a workman to ride along a suspension strand.

CABLE CLAMPS.

Miscellaneous details by which the cable rack sections may be spliced and interconnected.

CABLE CLIP.

Consists of notched, cadmium-plated sheet-metal strips used as an alternate for sewing twine.

ANCHOR. Basic cable clip which fastens to the transverse bar of the cable rack and from which all other cable clips are supported.

REGULAR. Clip attached to the start clip and continuing for the other layers of cable.

STARTING. First clip of the layer of cable attached to the anchor cable clip.

CABLE CLIP REMOVER.

Tool for removing regular and starting cable clips.

CABLE COLOR CODE.

Method of coding various colors of the insulation on wires of the switchboard cables for identification purposes.

CABLE COMPLEMENT.

Group of pairs in a cable having some common distinguishing characteristic.

CABLE CONNECTORS.

Solderless connector used for terminating and splicing power cables.

CABLE FILL.

Ratio of the number of pairs in use to the total number of pairs in a cable.

CABLE GUIDE.

Two hundred and seventy degree loop temporarily fastened to frames, to retain and guide the cables being run until permanent installation of the cable can be effected.

CABLE IDENTIFICATION TAG.

Paper tag affixed to both ends of a cable to identify the cable for circuit termination.

CABLE LASHER.

Machine which is used by pole-line construction crews in attaching cables to supporting messenger cables by spirally winding steel wire about the cables in order to bind one cable to the other.

CABLE MESSENGER.

Stranded group of wires supported above the ground at intervals by poles or other structures and employed to furnish, within these intervals, frequent points of support for conductors or cables.

CABLE MORSE CODE.

Three-element code used mainly in submarine cable telegraphy, in which dots and dashes are

represented by positive and negative current impulses of equal length, and a space by absence of current.

CABLE PULLER.

Basket-weave metal device used to grip the end of a telephone cable when pulling cable through conduit.

CABLE RACK.

1. Used to support the cable and wiring which connects the various items of equipment.
2. Structure of which the office cabling is supported.

CABLE RACK CLAMPS.

Steel clamps by means of which cable rack sections may be spliced, terminated, or turned at various angles.

CABLE REEL.

Spool-shaped container for storing or transporting a cable.

CABLE REEL SUPPORT.

Support on which the cable reels are mounted so the cable may be unwound from the reel.

JACK. Type of cable reel support used for heavy cable reels by which the reel may be raised from the floor.

CABLE RUN.

Path occupied by a cable on cable racks or other support from one termination to another.

CABLE RUNNING LIST.

Drawing showing the code of cable, terminations, circuit names, and numbering of cables appearing in an office.

CABLE RUNWAY.

Overhead sheet metal conduit in which office cables are laid between units of an all relay office.

CABLE SHIELD.

Collar or thimble, usually flared, inserted at the duct entrance in a manhole to protect the cable sheath or insulation from being worn away by the duct edge. (Reference: DUCT EDGE SHIELD.)

CABLE SKINNERS.

Part of a cable stripper extending from the cable form to the termination.

SLANTING. Multiple cable form in which the slanting side of form is nearest the multiple jacks or lamps.

STRAIGHT. Multiple cable form in which the straight side is nearest the jacks or lamps.

CABLE STITCHES AND KNOTS.

Various methods of sewing cable to cable racks and frames; and in sewing cable forms and local cables; examples: The Kansas City, Chicago, and Hawthorn stitches and knots.

CABLE STRIPPER.

Part of a cable from which the outer sheath has been removed for terminations.

CABLE VAULT.

Vault in which the outside plant cables are spliced to the tipping cables.

CABLE WAXING.

Impregnation of the cable forms with wax to remove moisture.

CABLEMAN.

CADF (CENTRAL AIR DEFENSE FORCE).

Major component of the Air Defense Command, providing air defense for the central portion of the United States.

CADO (CENTRAL AIR DOCUMENTS OFFICE).

CADW (CIVIL AIR DEFENSE WARNING).

System for alerting civilian agencies cooperating in the air-defense effort, to conditions of air defense warning.

CAGE ANTENNAS.

Antenna comprising a number of wires connected in parallel, and arranged in the form of a cage, to reduce the copper losses and increase the effective capacity.

CAIRC (CARIBBEAN AIR COMMAND).

One of the overseas commands of the Air Force, covering the Caribbean area and having its headquarters at Albrook Air Force Base, Canal Zone.

CAL. (CALIBER).

1. Diameter of a projectile, as of a bullet or shell; the diameter of the bore of a gun barrel.
2. Measure for the length of a cannon bore from the face of the breech block to the muzzle, expressed in multiples of the diameter of the bore.

CALCULAGRAPH.

Meter installed at switchboards to record length of subscriber's calls.

CALIBRATED FOCAL LENGTH.

Adjusted value of an equivalent focal length so computed as to distribute the effect of lens distortion over the entire field used in the aerial camera. Also stated as the distance along the lens axis from the interior perspective center to the image plane; the interior center of perspective being selected in order to distribute the effect of lens distortion over the entire field. The calibrated focal length is used when determining the setting of diapositives in plotting instruments and in photogrammetric computations based on linear measurements on the negative (such as those made with a precision comparator).

CALIBRATION.

1. Process of comparing an instrument or device with a standard to determine its accuracy or to devise a corrected scale.
2. Taking measurements of various parts of electronic equipment to determine the equipment's performance level, and whether it conforms to technical order specifications.

CALIBRATION DATA.

Record of the measurements obtained by calibration.

CALIBRATION MARKERS.

Indications on the screen of a radar indicator that divide the range scale into accurately known intervals for range determination, or checking against mechanical indicating dials, scales, or counters.

CALL.

Transmission made for the purpose of identifying the transmitting station and the station for which the transmission is intended.

CALL CIRCUIT.

Communication circuit between switching points used by the traffic forces for the transmission of switching instructions.

CALL INDICATOR.

Device for showing, visually, a number dialed from a dial office to a manual operator.

CALL LETTERS.

Validly assigned identifying letters for a radio station or transmitter. Letters are assigned by the Armed Services, the Federal Communications Commission, and by the integral branches of the government.

CALL SIGN.

1. Combination of characters of pronounceable word which identifies a communication facility, command, authority, activity or unit; used primarily for establishing and maintaining communications.

2. Designation used by ground installations and airborne objects to address one another in either verbal or automatic communication.

COLLECTIVE. Call sign which represents two or more facilities, commands, authorities, or units. The collective call sign for any of these includes the commander thereof and all subordinate commanders therein.

INDEFINITE. Call sign which does not represent a specific facility, command, authority, activity or unit, but which may represent any one or any group of these.

INTERNATIONAL. Call sign assigned in accordance with the provisions of the International Telecommunications Union to identify a radio station. The nationality of the radio station is identified by the first or the first two characters.

NET. Call sign which represents all stations within a network.

OCEAN STATION. Call sign assigned to identify an ocean station vessel, assigned to, and occupying the ocean station identified thereby.

TACTICAL. Call sign which identifies a tactical command or tactical communication facility.

VISUAL. Call sign provided primarily for visual signaling.

VOICE. Call sign provided primarily for voice communication.

CALLED STATION.

Station to whom a message is routed or a transmission is directed.

CALLING STATION.

1. Station initiating a transmission.
2. Station preparing a tape for transmission.

CALORESCENCE.

Transformation of infrared radiant energy into visible light, as in the emission of visible light by an object that has been heated to redness or whiteness by focusing infrared rays on it.

CALORIE.

Unit of heat energy in the Metric system. The amount of heat required to raise the temperature of one gram of water one degree Centigrade. The corresponding unit is the BTU which is equal to 252 calories.

CALORIMETER.

Apparatus used for measuring quantities of heat.

CAM.

Eccentric projection on a shaft designed to transport a specific motion to a follower.

CAM FOLLOWER.

Mechanical part of the portion of the push rod that rubs, bears on, or follows the cam.

CAMERA.

Chamber or box in which the images of exterior objects are projected, under control, upon a sensitized surface.

CAMERA CABLE.

Cable or group of wires that carries the picture from the television camera to the control room.

CAMERA CHAIN.

Television camera and the necessary electronic equipment to deliver a picture for broadcasting.

CAMERA SPECTRAL CHARACTERISTIC.

Sensitivity of each television camera color channel with respect to wavelength.

CAMERA TUBE.

Special vacuum tube that performs the two important functions of converting an optical image into a corresponding electrical image and selecting the picture elements in the proper sequence of alternate rows as required for interlaced transmission.

CAMERAS, HIGH-SPEED.

High-speed motion picture cameras that will take as many as 8,000 pictures in one second.

CAMP RADAR SYSTEM.

Classified definition. (Reference: AFM 100-50.)

CAMSHAFT.

Shaft that supports the various cams required for the transfer of specific motion to mechanical parts of an apparatus.

CAN. (CANADA).

Country in North America, including Newfoundland and Arctic islands north of the mainland. It is a dominion of the British Commonwealth and the capital is Ottawa. Area is 3,619,616 square miles and the population is 14,009,400 (1953 census).

CANADA BALSAM.

Clear, almost colorless resin used in cementing optical elements together, particularly the components of a compound lens.

CanAirDef (AIR DEFENSE COMMAND HEADQUARTERS, ST. HUBERT, PROVINCE OF QUEBEC, CANADA).

CanAirFax (MARITIME GROUP HEADQUARTERS, HALIFAX, NOVA SCOTIA).

CanAirHed (AIR FORCE HEADQUARTERS, OTTAWA, ONTARIO, CANADA).

CanAirLift (AIR TRANSPORT COMMAND HEADQUARTERS, OTTAWA, ONTARIO CANADA).

CanAirLon (AIR MEMBER, CANADIAN JOINT STAFF, LONDON, ENGLAND).

CanAirMat (AIR MATERIEL COMMAND HEADQUARTERS, OTTAWA, CANADA).

CanAir New (SENIOR RCAF LIAISON OFFICER, ST. JOHNS, NEWFOUNDLAND).

CanAirNorWest (NORTHWEST AIR COMMAND HEADQUARTERS, EDMONTON, ALBERTA).

CanAirPeg (FOURTEEN TRAINING GROUP HEADQUARTERS, ROYAL CANADIAN AIR FORCE, WINNIPEG, MANITOBA, CANADA).

CanAirTac (CANADIAN ONE TACTICAL AIR COMMAND HEADQUARTERS, EDMONTON, ALBERTA, CANADA).

CanAirTrain (TRAINING COMMAND GROUP HEADQUARTERS).

CanAirVan (CANADIAN 12 AIR DEFENSE GROUP HEADQUARTERS, VANCOUVER, BRITISH COLUMBIA, CANADA).

CanAirWash (AIR MEMBER CANADIAN JOINT STAFF, WASHINGTON, D.C.).

CANAL RAYS.

Streams of positive ions which are started in motion in an evacuated tube in a direction from the anode to the cathode.

CanAS (CANADIAN AIR STATION).

CanAVAT (CANADIAN NAVAL ATTACHE).

CanAVBRIT (NAVAL MEMBER, CANADIAN JOINT STAFF, LONDON, ENGLAND).

CanAVCHARGE (SENIOR NAVAL OFFICER OR NAVAL OFFICER IN CHARGE).

CanAVHED (NAVAL HEADQUARTERS, OTTAWA, ONTARIO).

CanAVSTORES (NAVAL STORES OFFICER).

CanVAS (NAVAL MEMBER CANADIAN JOINT STAFF, WASHINGTON, D.C.).

CanCarAirGrp (CARRIER AIR GROUP).

CanComDesFE (COMMANDER CANADIAN DESTROYERS, FAR EAST).

CanComDesLant (COMMANDER CANADIAN DESTROYER ATLANTIC).

CanComDesLoTil (COMMANDER FIRST CANADIAN DESTROYER FLOTILLA).

CanComDesPac (COMMANDER CANADIAN DESTROYERS PACIFIC).

CanComFltiAnt (SENIOR CANADIAN NAVAL OFFICER AFLOAT ATLANTIC).

CanComFltPac (SENIOR CANADIAN NAVAL OFFICER AFLOAT PACIFIC).

CanComNew (CANADIAN NAVAL COMMANDER, NEWFOUNDLAND).

CanDep (ROYAL CANADIAN NAVAL DEPOT).

CanDesFE (CANADIAN DESTROYERS FAR EAST).

CanDesFlotI (FIRST CANADIAN DESTROYER FLOTILLA).

CanDesLant (CANADIAN DESTROYERS ATLANTIC).

CANDLE.

Unit of luminous intensity.

CANDLE POWER.

Unit of measure of the brightness of strength of any light source.

CANDLE QUARTZ.

Faced quartz crystal of a long prismatic and often tapering shape.

CANDLE-HOUR.

Unit of light, or luminous energy, equal to the total luminous energy emitted in one hour by a source having a luminous intensity of one candle.

CanFlagAnt (FLAG OFFICER, ATLANTIC COAST).

CanFlagPac (FLAG OFFICER, PACIFIC COAST).

CANNIBALIZE.

Remove the serviceable parts from one item of equipment in order to install them on another item of equipment.

CANNING.

Term used by nuclear physicists for the sheathing of uranium slugs for insertion into uranium piles.

CanResLant (SENIOR OFFICER RESERVE FLEET EAST COAST).

CanResPac (SENIOR OFFICER RESERVE FLEET WEST COAST).

CanUKUS (CANADA-UNITED KINGDOM-UNITED STATES).

CanUKUS JCECS (CANADIAN-UNITED KINGDOM-UNITED STATES JOINT COMMUNICATIONS-ELECTRONICS COMMITTEES).

CAP. (CAPACITY).

1. Term often used for capacitance.
2. Characteristic of electrical dielectric of storing a charge of electricity under electrical pressure which can later be recovered.
3. The rated load of a machine, apparatus, or device, or the maximum load that can be handled under existing service conditions.

CAP. (CIVIL AIR PATROL).

Volunteer, semimilitary civilian auxiliary air organization, supervised and administered by the Air Force, and trained and equipped to assist in national and local emergencies.

CAP. (COMBAT AIR PATROL).

Air patrol over any area or force usually for the purpose of intercepting and attacking hostile airborne objects before they can reach their objective.

CAP ANGLE.

Interior angle between a rhombohedral face and optic axis.

CAP FACES.

Term applied to denote the inclined, terminating, rhombohedral faces of quartz. Synonymous with apex faces and top faces rhombohedral.

CAP LAMP.

Transparent or translucent cover over a signal light fitted with colors or markings of special meaning.

CAP, REDUCING.

Cast iron fitting for reducing the size of a steel pipe at the base of a pole to fit a U-guard.

CAPACITANCE.

1. Ability to store electrical energy, measured in farads, microfarads, or micro-microfarads.
2. Property of a capacitor which determines the amount of electrical energy which can be stored in it by applying a given voltage.
3. Property of two or more bodies which enables them to store electrical energy in an electrostatic field between them.

BODY. Capacitance introduced into an electrical circuit by the proximity of the human body.

DISTRIBUTED. Capacitance that exists between the turns in a coil or choke, or between adjacent conductors or circuits, as distinguished from the capacitance which is concentrated in a capacitor.

INTERELECTRODE. Capacitance existing between the electrodes in an electron tube.

STRAIGHT-LINE. Variable capacitor characteristic obtained when the rotor plates are so shaped that the capacitance varies directly in proportion to the angle of rotation.

CAPACITANCE DIVIDER.

Circuit made up of capacitors for measuring accurately, the value of a high-voltage pulse by making available only a conveniently small fraction of the total pulse voltage for the measurement.

CAPACITANCE FEEDBACK.

Process of returning part of the energy in the plate (or output) circuit of a vacuum tube to the grid (or input) circuit by means of a capacitance common to both circuits.

CAPACITANCE REACTANCE.

1. Type of reactance which is caused by the capacitance of a circuit. It is expressed in ohms, and is equal to the reciprocal of 2π times the product of the frequency in cycles per second and the capacitance in farads.
2. Opposition offered to the flow of an alternating current by capacitance, expressed in ohms.

CAPACITIVE COUPLING.

Association of two or more circuits with one another by means of capacitance mutual to the circuits. That type of interconnection between stages of an amplifier which employs a capacitor in the circuit between the plate of one tube and the grid of the succeeding one.

CAPACITOR.

Device consisting essentially of two conducting surfaces separated by an insulating material or dielectric such as air, paper, mica, glass, or oil. A capacitor stores electrical energy, blocks the flow of direct current, and permits the flow of alternating current to a degree dependent on the capacitance and the frequency.

AIR. Capacitor using air as the dielectric material between its plates.

BLOCKING. Capacitor which introduces a comparatively high series impedance for limiting the current flow of low-frequency alternating current or direct current without materially affecting the flow of high-frequency alternating current.

BYPASS. Capacitor used to provide an ac path of comparatively low impedance around a circuit element.

COUPLING. Capacitor used to couple two circuits together. Coupling is accomplished by means of capacitive reactance common to both circuits.

DRY ELECTROLYTIC. Electrolytic capacitor in which the electrolyte is in paste, rather than liquid form.

ELECTROLYTIC. Capacitor which is comprised of two plates separated by electrolyte. Under the action of the applied dc voltage, a film of hydrogen gas is formed on one plate, and it is this film which acts as the dielectric. This type of construction makes it possible to concentrate large values of capacitance in a relatively small space.

FIXED. Capacitor that has no provision for varying its capacitance.

GRID. Capacitor which is connected in parallel with the grid resistor and in series with the grid lead of an electron tube.

NONINDUCTIVE. Capacitor which is so constructed that it has practically no inductance.

PADDER. Adjustable capacitor used in conjunction with a main tuning capacitor when ganged tuning of several stages is employed. Its purpose is to permit adjustments for proper tracking of a local oscillator.

PHASING. Capacitor used in a crystal-filter circuit to neutralize the capacity of the crystal holder.

RADIO. Two electrodes or sets of electrodes separated from each other by an insulating material called the dielectric.

TRIMMER. Variable capacitor associated with another capacitor and used for fine adjustment of the total capacitance.

VARIABLE. Capacitor whose capacitance may be varied from maximum to minimum by mechanical means.

CAPACITOR PICKUP.

Phonograph pickup which depends on the variation of its capacitance for its operation.

CAPACITOR SPEAKER.

Loudspeaker in which the mechanical forces result from variations in electrostatic capacitance.

CAPACITOR-INPUT FILTER.

Filter which has a capacitor connected directly across (in parallel with) its input.

CAPACITOR-START MOTOR.

Ac split-phase induction motor in which a capacitor is connected in series with an auxiliary winding to provide a means of starting.

CAPACITY.

1. Term often used for capacitance.
2. Characteristic of electrical dielectric of stored charges of electricity under electrical pressure which can later be recovered.
3. Rated load of a machine, apparatus, or device, or the maximum load that can be handled under existing service conditions.

UNITS OF. One farad is the capacity of a capacitor which is given a charge of one coulomb by a potential difference of one volt across its terminals. One centimeter of capacity is the centimeter-gram-second electrostatic unit of capacity.

CAPACITY BRIDGES.

Instrument using a modification of the Wheatstone bridge arrangement for measuring electric charge capabilities in unit values or farads, microfarads, or micro-microfarads.

CAR. (CARIBBEAN REGION).

Caribbean territory defined for administrative reasons.

CAR, CABLE.

Seat suspended from two wheels to permit a workman to ride along a suspension strand.

CAR. 60 (UNITED STATES CIVIL AIR REGULATION, PART 60).

CARBON.

Element freely found in nature. More common forms are coal, graphite, and diamonds.

CARBON 11.

Radioactive member of the carbon family with a half-life of 21 minutes.

CARBON 13.

Radioactive member of the carbon family which serves as a tracer in chemical reactions.

CARBON 14.

Radioactive member of the carbon family which serves as a radioactive tracer.

CARBON DIOXIDE.

Gas composed of one part carbon and two parts oxygen.

CARBON MICROPHONE.

Microphone which depends for its operation upon the variation in resistance of carbon granules.

CARBON MONOXIDE.

Gas composed of one part carbon and one part oxygen.

CARBON MONOXIDE DETECTOR AMPOULE.

Thin glass vial which, when broken, releases a liquid which changes color in the presence of carbon monoxide.

CARBON PILE REGULATOR.

Device, the resistance of which decreases in accordance with the pressure or compression applied.

CARBON PRESSURE RECORDING.

Type of facsimile recording in which a pressure device or impact element acts upon carbon paper to mark on the record sheet.

CARBON TRANSFER RECORDING.

Type of facsimile recording in which carbon particles are deposited on the record sheet in response to the received signal.

CARBON-CONTACT PICKUP.

Phonograph pick-up that depends for its operation upon the variation in resistance of carbon contacts.

CARBONS.

Piece of squared carbon, or several pieces cemented with a mica separator, which forms one element of a protector.

CARBORUNDUM.

1. Compound of carbon and silicon. It can be

used as a crystal detector to rectify or detect radio waves.

2. High quality abrasive particularly suited for sharpening cutting tools.

CARBURIZING.

Operation of raising the carbon content of mild steel on the surface, and then quenching with the object of increasing the surface hardness by subsequent treatment. (Reference: CASE HARDENING.)

CARD, CIRCUIT LAYOUT.

Printed form on which is entered the circuit name and number and a list of the circuit elements comprising the entire circuit together with operating information and limits for a toll circuit, channel, carrier system, or private line.

CARD, TROUBLE HISTORY.

Card for recording the performance of a circuit or service.

CARDINAL POINTS.

1. Focal points, the principal points, and the nodal points of a lens or of symmetrical optical instruments.
2. Four points of a compass.

CARDIOID MICROPHONE.

Microphone that has a heart-shaped response pattern that gives nearly uniform response for a range of about 180 degrees in one direction and a minimum response in the opposite direction.

CARDIOID PATTERN.

Heart-shaped pattern obtained as the response or radiation characteristic of certain directional antennas, or as the response characteristic of certain types of microphones.

CARDS, DESIGNATION.

Cards placed in the card holders at the various frames and also with the various jack equipment at switchboards to show the line or jack assignments.

CARIB (CARIBBEAN).

CARIBBEAN AIR COMMAND.

One of the overseas commands of the Air Force, covering the Caribbean area and having its headquarters at Albrook Air Force Base, Canal Zone.

CARRIER.

1. Wave suitable for modulation by the intelligence to be transmitted over a communication system. The RF component of a transmitted wave upon which an audio signal or other form of intelligence can be impressed. The carrier can be sinusoidal wave or a recurring series of pulses.
2. High frequency current superimposed on a voice circuit, on which can be modulated additional voice or signalling channels. (Reference: CARRIER WAVE.)

CONTROLLED. System of modulation wherein the carrier is amplitude modulated by the signal frequencies and, in addition, the carrier is amplitude modulated in accordance with the envelope of the signal, so that the modulation factor remains constant regardless of the amplitude of the signal.

MODULATED. Radio-frequency carrier whose amplitude or frequency has been varied in accordance with the intelligence to be conveyed.

CARRIER AMPLITUDE REGULATION.

Change in amplitude of the carrier wave in an amplitude-modulated transmitter when modulation is applied under conditions of symmetrical modulation.

CARRIER CHROMINANCE SIGNAL.

Sidebands, in color television, of modulated chrominance subcarrier, plus any unsuppressed subcarrier, added to monochrome signal to convey color information.

CARRIER COLOR SIGNAL.

Sidebands, in color television, of the modulated color subcarrier (plus the color subcarrier, if not suppressed), which are added to the monochrome signal to convey color information.

CARRIER CONTROLLED APPROACH SYSTEM.

Aircraft carrier radar system providing information by which aircraft approaches may be directed by means of radio communications.

CARRIER FREQUENCY.

1. Alternations or pulses of an unmodulated carrier wave.
2. Reciprocal of a periodic carrier period.

CARRIER FREQUENCY RANGE OF A TRANSMITTER.

Continuous range of frequencies within which the transmitter may be adjusted for normal operation.

CARRIER FREQUENCY STABILITY.

Measure of the ability of the transmitter to maintain an assigned frequency.

CARRIER LEAK.

Carrier frequency is rarely suppressed perfectly in suppressed carrier systems. The carrier frequency remaining is called carrier leak and is commonly measured at some point beyond the balanced modulator or carrier suppression filter.

CARRIER LEVEL.

Strength or level of an unmodulated carrier signal at a particular point, expressed in decibels.

CARRIER LINE.

Transmission line used for multiple channel working by the carrier method.

CARRIER LOADING.

Inductive lump loading in the cable section of a transmission line specifically designed for carrier transmission. Loading serves to minimize impedance mismatch between cable and open wire and to reduce the cable attenuation.

CARRIER NOISE.

Noise produced by undesired variations of an RF signal in the absence of any intended modulation.

CARRIER NOISE LEVEL.

Noise level produced by undesired variations of a carrier in the absence of any intended modulation.

CARRIER POWER.

Power or signal strength of carrier wave.

CARRIER POWER OUTPUT RATING.

Unmodulated power nominally available at the output terminals of the transmitter when connected to its normal antenna, or to an equivalent circuit.

CARRIER REPEATER.

Equipment designed to raise carrier signal levels to such a value that they may traverse a succeeding line section at such amplitude as to preserve an adequate signal-to-noise ratio. While the heart of a repeater is the amplifier, necessary adjuncts are filters, equalizers, level controls, etc., depending upon the operating methods; all are considered a part of the repeater.

CARRIER SHIFT.

1. Transmission of radio-teletypewriter messages by shifting the carrier frequency in one direction for a marking signal and in the opposite direction for a spacing signal.
2. Condition resulting from imperfect modulation whereby the positive and negative excursions of the envelope pattern are unequal, thus effecting a change in the power associated with the carrier.

CARRIER SIGNALING.

Method by which busy signals, ringing or dial signaling relays are operated by the transmission of a carrier frequency tone. The frequency of a carrier employed for carrier signaling may lie either inside the range assigned to the speech channel; between channels, or a group of such tones for a number of signaling circuits; in a voice band or a half band assigned for the purpose.

CARRIER SUPPRESSION.

Method of operation in which the carrier wave is not transmitted.

CARRIER SWING.

Total deviation of an FM or PM wave from the lowest instantaneous frequency to the highest instantaneous frequency.

CARRIER TELEGRAPHY.

Telegraphy in which, to form the transmitted signals, alternating current is supplied to the line

after being modulated under the control of the transmitting apparatus.

CARRIER TELEPHONY.

Telephony in which carrier transmission is used, the modulating frequency being an AF wave.

CARRIER TERMINAL.

Apparatus at one end of a carrier transmission system, whereby the processes of modulation, demodulation, filtering, amplification, and associated functions are effected.

CARRIER TRANSFER FILTERS.

Filters arranged as a carrier-frequency crossover or bridge between two transmission circuits.

CARRIER TRANSMISSION.

Transmission in which the transmitted electric wave is a wave resulting from the modulation of a single frequency wave by a modulating wave.

CARRIER WAVE.

RF component of a transmitted wave upon which an audio signal or other form of intelligence can be impressed.

CARRIER-TO-NOISE RATIO.

1. Ratio of the value of the carrier to that of the noise after selection and before any non-linear process such as amplitude limiting and detection.
2. Ratio of RF carrier to RF noise prior to demodulation. (Reference: SIGNAL-TO-NOISE RATIO.)

CARRY.

1. Signal, or expression, in an electronic computer, produced as a result of an arithmetic operation on one digit place of two or more numbers expressed in positional notation and transferred to the next higher place for processing there.
2. Usually a signal or expression as defined in 1. above which arises in adding, when the sum of two digits in the same digit place equals or exceeds the base of the number system in use. If a carry into a digit place will result in a carry out of the same digit place, and if the normal adding circuit is bypassed when generating this

new carry, it is called a high-speed carry, or standing-on-nines carry. If the normal adding circuit is used in such a case, the carry is called a cascaded carry. If a carry resulting from the addition of carries is not allowed to propagate, the process is called a partial carry. If it is allowed to propagate, the process is called a complete carry. If a carry generated in the most significant digit place is sent directly to the least significant place, that carry is called an end-carry.

3. Signal, in direct subtraction, or expression as defined in 1. above which arises when the difference between the digits is less than zero. Such a carry is frequently called a borrow.

4. Action of forwarding a carry.

5. Command directing a carry to be forwarded.

CARTOGRAPHY.

Science and art of expressing graphically, by means of maps and charts, the known physical features of the earth's surface.

CARTON.

Container in which a number of units of chaff are packed.

CASCADE AMPLIFIER.

Amplifier of several stages, the output of one being the input of the next.

CASCADE CIRCUIT.

Multi-stage amplifier circuit used in VHF and UHF amplifiers to provide high signal-to-noise ratio.

CASCADE CONNECTION.

Tandem arrangement of two or more similar component devices in which the output of one is connected to the input of the next.

CASCADED CARRY.

(Reference: CARRY.)

CASE.

Bulk package into which a number of cartons of chaff are packed.

CASE HARDENING.

Process of increasing the hardness of the surface of steel by carburization.

CAST IRON.

General term applicable to alloys of iron and carbon containing more than two percent carbon.

CAT WHISKER.

Small, sharp-pointed wire used to make contact with a sensitive point on the surface of a semiconductor.

CATYLIST.

Substance used to aid a chemical reaction without entering into the chemical reaction itself.

CATALYST.

Device for launching a rocket or airplane with high initial speed.

CATCHER.

Electrode in a velocity-modulated vacuum tube on which the spaced electron groups induce a signal. The output of the tube is taken from this element.

CATENERY.

Curve assumed by a perfectly flexible and uniform chain or line hanging in equilibrium between two supports.

CATHODE.

1. Negatively charged pole, electrode, conductor, or element from which current leaves.
2. Primary source of electrons in a vacuum tube.
3. General term for a negative electrode.

DIRECTLY HEATED. Filament cathode which carries its own heating current, for electron emission, as distinguished from an indirectly heated cathode.

HOT. Cathode in which electron emission is produced by heat.

INDIRECTLY HEATED. Cathode which is brought to the temperature necessary for electron emission by separate heater element.

CATHODE BIAS.

Method of biasing a vacuum tube by placing the biasing resistor in the common cathode-return circuit, making the cathode more positive, rather than the grid more negative, with respect to ground.

CATHODE COUPLING.

Use of an input or output element in the cathode circuit for coupling energy to another stage.

CATHODE CURRENT.

Total current passing through the cathode.

CATHODE EMISSION.

Process whereby electrons are emitted from the cathode structure.

CATHODE FOLLOWER.

Vacuum-tube circuit in which the input signal is applied between the control grid and ground, and the output is taken from the cathode and ground. A cathode follower circuit has a high input impedance and a low output impedance.

CATHODE HEATING TIME.

Cathode heating time is the time required for the cathode to attain operating temperature with normal voltage applied to the heating element.

CATHODE KEYING.

Method of keying a radio-telegraphic transmitter by opening the plate return lead to the cathode or filament center tap.

CATHODE MODULATION.

Amplitude modulation obtained by simultaneously varying the plate and control grid voltages, thus varying the cathode current. The actual modulating voltage is injected in the cathode lead. Also defined as the modulation produced by application of the modulation voltage to the cathode of any electron tube in which the carrier is present.

CATHODE RAYS.

Electron emission from the cathode of a tube.

CATHODE RESISTOR.

Resistance connected in the cathode circuit of a tube so that the voltage drop across it will supply the proper cathode-biasing voltage. (Reference: CATHODE BIAS.)

CATHODE SPOT.

Locally heated area of mercury surface in mercury pool rectifier. This serves as a source of electrons.

CATHODE SPUTTERING.

Process sometimes used in the production of the metal master disk, wherein the wax or lacquer original is coated with an electrical discharge in a vacuum.

CATHODE-RAY OSCILLOSCOPE.

Test instrument which, when properly adjusted, makes possible the visual inspection of ac signals. It consists of an amplifier, time base generating circuits, and cathode-ray tube for translation of electrical energy into light energy.

CATHODE-RAY TUBE.

Vacuum tube in which the instantaneous position of a sharply focused electron beam, deflected by means of electrostatic and/or electromagnetic fields, is indicated by a spot of light produced by the impact of the electrons on a fluorescent screen at one end of the tube.

CATHODE-RAY TUBE SCREEN.

Fluorescent material that covers the inside surface of the picture end of the cathode-ray tube.

CATHODE-RAY TUNING INDICATOR.

Small cathode-ray tube (magic eye) that visually indicates whether an apparatus, such as a radio receiver, is tuned accurately to a station.

CATION.

Positive ion that moves toward the cathode in a discharge tube, electrolytic cell or similar equipment; the corresponding negative ion is called anion.

CAVITY FILTER.

Selective tuned device which attenuates unwanted off-frequency signals.

CAVITY MAGNETRON.

Microwave generator made up of a cylinder of copper around the inner diameter of which a series of identical key holes have been cut with the narrow slot opening into the center hole. A cathode is placed in the center of the body.

CAVITY RESONATOR.

1. Hollow metallic cavity in which electromagnetic oscillations can exist when the cavity is properly excited.

2. Space normally bounded by an electrically conducting surface in which oscillating electromagnetic energy is stored, and whose resonant frequency is determined by the geometry of the enclosure.

CAVU (CEILING AND VISIBILITY UNLIMITED).

No measurable limit to visibility when looking upward.

CAX (COMMUNITY AUTOMATIC EXCHANGE).

Small dial office serving a community.

CB (CENTRAL BATTERY).

Short of central battery exchange. Manual exchange that provides, from a battery situated at the exchange, current needed for operating supervisory signals and subscribers' calling signals; also the current required to enable a subscriber to speak over his line.

CB (COMMON BATTERY).

System of current supply where all dc energy for a unit of a telephone system is supplied by one source in a central office or exchange.

CBLMN (CABLEMAN).**CBS (CENTRAL BATTERY SIGNALING).****CC (COMBAT CENTER).**

Physical facility from which a NORAD exercises supervision of air-defense operations by its subordinate SAGE direction center. The combat center is equipped with an AN/FSQ-8 Combat Control Central.

CC (CONSULTATIVE COMMITTEE).**CCA (CARRIER CONTROLLED APPROACH) SYSTEM.**

Aircraft carrier radar system providing information by which aircraft approaches may be directed by means of radio communications.

CCBP (COMBINED COMMUNICATIONS BOARD PUBLICATIONS).**CCIF (INTERNATIONAL TELEPHONE CONSULTATIVE COMMITTEE).**

International committee covering ordinary telephone, carrier telephone, music transmission, picture transmission, television transmission, and

multi-channel telegraph transmission over wire lines. This committee has the responsibility of studying technical operating and tariff questions pertaining to the above types of transmission over wire lines and issuing recommendations.

CCIR (INTERNATIONAL RADIO CONSULTATIVE COMMITTEE).

International committee which operates in a manner similar to the CCIF, but subjects pertaining to radio, television, and multi-channel radio transmission.

CCIT (INTERNATIONAL TELEGRAPH CONSULTATIVE COMMITTEE).

International committee which operates in the same manner as the CCIF group but on matters pertaining to telegraph and facsimile.

CCS (COLLECTIVE CALL SIGN).

Call sign which represents two or more facilities, commands, authorities, or units. The collective call sign for any of these includes the commander thereof and all subordinate commanders therein.

CCWO (CRYPTOCENTER WATCH OFFICER).**CDA (CIVIL DEFENSE AGENCY).****CE (CORPS OF ENGINEERS).****CECMAL.**

Term used to designate requirements for communications-electronics equipment in support of wartime plans not currently indicated as part of station sets, MEAL, or other equipment assemblages.

CECS (COMMUNICATIONS-ELECTRONICS COORDINATION SECTION).**CED (COMMUNICATIONS-ELECTRONICS DOCTRINE).**

Series of Air Force manuals authorized by AFR 100-13. These manuals contain C-E directives, data, instructions, and related information covering basic concepts, policies, planning systems, and operating instructions. Specialized information required by C-E staffs to plan, implement, and operate C-E systems and facilities is included in CED Manuals.

**CEI (COMMUNICATIONS-ELECTRONICS-
INSTRUCTIONS).**

Replaced by a series of Air Force Manuals in the 100 series called communications-electronics doctrine.

CEILOMETER.

System for measuring and recording the height of a cloud above ground level. A beam of light is projected vertically, creating a spot on the base of any existing cloud ceiling. A detecting instrument which constantly scans in elevation from zero to 90 degrees, but is stationary in azimuth, is placed at a known distance from the light projector and in such a position as to detect the spot with each scan. The height of the cloud ceiling is calculated by determining the tangent of the angle of elevation of the spot and multiplying it by the base line horizontal distance between the detector and the projector. By modulating the beam of light to give it an identifying characteristic, this principle may be used during the day as well as for nighttime measurements. It is possible to detect the presence of cloud ceilings and record their elevation up to 10,000 feet. Detection between 10,000 and 15,000 feet is good, but the accuracy in elevation measurement is poor. At 20,000 feet detection is possible, but inconsistent, and elevation measurements are of doubtful value.

**CEIP (APPROVED COMMUNICATIONS-
ELECTRONICS IMPLEMENTATION PLAN).**

CELESTIAL MECHANICS.

Branch of astronomy concerned with the laws governing the motions of heavenly bodies.

CELL.

1. Single unit, such as a battery, that produces a direct voltage by converting chemical energy into electrical energy.
2. Single unit that produces a direct voltage by converting radiant energy into electrical energy.
3. Single unit that produces a varying voltage drop because its resistance varies with illumination.
4. Tubular mounting used to hold a lens in its proper position.

5. Elementary unit of storage.

COUNTER ELECTROMOTIVE. Cell or series of cells which may be connected in series with the regular office storage battery to reduce voltage of the office battery.

DRY. Source of electrical energy depending on the reaction of a chemical paste on carbon and metal or two metals for its supply.

PHOTOCONDUCTIVE. Photoelectric cell in which the electrical resistance varies inversely with the intensity of light that strikes the cell's active material.

PILOT. Selected cell of a storage battery whose temperature, voltage, and specific gravity are assumed to indicate the condition of the entire battery.

CELLS, END.

Group of cells in series with the central office storage battery, which can be switched in to maintain the output voltage of the battery when it is not being charged.

CELLULOID.

Clear, strong and elastic colorless plastic.

CELLULOSE ACETATE.

Thermo-plastic material used for radio cabinets, instrument lenses, etc.

CELLULOSE NITRATE DISKS.

Lacquer disks.

CEM (COUNTER ELECTROMOTIVE) CELL.

Cell or series of cells which may be connected in series with the regular office storage battery to reduce voltage of the office battery.

CEMENTITE.

Iron carbide.

CEN (CENTER).

1. Place where services of some special sort are centralized.
2. The organization or activity at such a place.
3. In the Air Research and Development Command, an echelon comparable to a numbered air force.

CENSORSHIP.

Action of passing, delaying, paraphrasing, suppressing, returning for correction, or deleting a portion of any communication.

CENTER, TOLL.

Operating office for completing toll calls which handles all of its own traffic, and may handle all or some of other tributary offices.

CENTER EXPAND.

Movement or start of PPI sweep from center of CRT in order to give a depression in the center of a pattern.

CENTER FREQUENCY.

1. Resting frequency.
2. Average frequency of the emitted wave when modulated by a symmetrical signal.
3. Frequency midway between the picture black and picture white frequency.

CENTER HOLE.

Hole in the center of the record, that fits the center pin of the turntable.

CENTER OF CURVATURE.

Center of the sphere of which the surface of a lens or mirror forms a part.

CENTER OF GRAVITY.

Point in a body at which the weight may be assumed to act or the point at which the body may be supported in balance.

CENTER PIN.

Shaft protruding from the center of the turntable used for centering the record.

CENTERING CONTROL.

Control used for positioning the image on the screen of a CRT, by either changing the dc potential on the deflection plates in the electrostatic system or changing the direct current flowing through the deflection coils in the magnetic system.

CENTI.

Prefix meaning one hundredth.

CENTIBAR.

One hundredth of a bar.

CENTIGRADE.

Thermometric scale on which 0° denotes the freezing temperature; and 100°, the boiling temperature of water, under standard atmospheric pressure.

CENTIMETER.

Unit of length in the metric system, equal to 0.01 meter or 0.394 inch.

CENTRAL AIR DEFENSE FORCE.

Major component of the Air Defense Command, providing air defense for the central portion of the United States.

CENTRAL BATTERY EXCHANGE.

Manual exchange that provides, from a battery situated at the exchange, current needed for operating supervisory signals and subscribers' calling signals and also the current required to enable a subscriber to speak over his line.

CENTRAL BATTERY SIGNALING EXCHANGE.

Manual exchange that provides, from a battery situated at the exchange, current needed for operating supervisory signals and subscriber's calling signals but not the current required to enable subscribers to speak over their lines, the latter being provided by local batteries installed at the subscriber's premises or by dry cells in the telephone.

CENTRAL INTELLIGENCE AGENCY.

Organization under the National Security Council that coordinates the intelligence activities of government departments and agencies. It correlates and evaluates intelligence relating to national security, and provides for disseminating this intelligence within the Government.

CENTRAL INTELLIGENCE BOARD.

Panel of the Central Intelligence Agency.

CENTRAL OFFICE.

Office in a telephone system that provides service to the general public where orders for, or signals controlling telephone connections are received and established.

CENTRAL OFFICE AREA.

Area which receives telephone service from a central office.

CENTRAL OFFICE EQUIPMENT.

Apparatus located in a central telephone office.

CENTRAL OPEN AREA.

One of two specifically designated areas within which the ready identification of airborne objects is not required except during periods of air defense emergency, (Reference: FLORIDA OPEN AREA.)

CENTRAL RADIO PROPAGATION LABORATORY.

Organization, reporting to the department of commerce through the bureau of standards, which is responsible for the collection, correlation, and analysis of data on which radio-propagation predictions are based, the issuance of radio-propagation predictions, research on radio propagation, and measurement methods and standards.

CENTRAL STANDARD TIME.

Mean time based on the 90th meridian, west longitude.

CENTRAL STATION EQUIPMENT.

Signal receiving, recording, or retransmission equipment installed in the central station.

CENTRIFUGAL FORCE.

Force acting on a rotating body which tends to throw it farther from the axis of its rotation.

CENTRIPETAL FORCE.

Force which constrains a moving body to follow a curved path rather than a straight line.

CEO (COMMUNICATIONS-ELECTRONICS OFFICER).

Member of the battle staff responsible for all matters pertaining to proper functioning of radio, wire, and electronic devices.

CEP (CIRCULAR PROBABLE ERROR).

Probable bombing error expressed in terms of the radius of a circle centered on the desired mean point of impact of a bombfall and containing half of the expected bombfall, excluding gross errors; also sometimes applied to the actual bombing error; with an airburst atomic bomb, the probable bombing error expressed in terms of the radius of a circle centered upon the desired ground zero, the radius from that point being projected horizontally to the point below the bomb burst. Gross errors are also excluded in atomic bombing; with reference to guided missiles, a probable error expressed in terms of the radius of a circle within which one half of a given number of missiles can be expected to fall. Gross errors are usually excluded.

CERAMIC.

Pertaining to articles made from earth.

CERAMIC BEAD.

Wafer type insulator used to support and insulate the center conductor of a coaxial line.

CERAMIC LINER.

Porcelain-like heat-resistant lining.

CESIUM.

Alkali metal used in forming the cathodes of some phototubes.

CF (CARRIER FREQUENCY).

1. Alternations or pulses of an unmodulated carrier wave.
2. Reciprocal of a periodic carrier.

CG (COMMANDING GENERAL).

General officer commanding an installation or organization, such organization normally being a wing or larger organization. Usually called a commander in the Air Force.

CGS (CENTIMETER-GRAM-SECOND) SYSTEM OF UNITS.

Absolute system for measuring physical quantities in which the fundamental units are the centimeter, gram and second. This system is primarily applicable only to mechanical units. It is extended to other fields of physical science by accepting the energy and by introducing a fourth unit or a property of a material.

CH (CHIEF).

1. Leader or head of an organization, division, staff team, or operation.
2. The term is applied to any number of Air Force military and civilian persons of varying rank or grade.

CHAD TAPE.

Tape used in printing telegraphy/teletypewriter operation. The perforations are severed from the tape making holes representing characters. The characters are not normally printed on chad tape.

CHADLESS TAPE.

Tape used in printing telegraphy/teletypewriter operation. The perforations are not completely severed from the tape, thereby permitting the characters representing the perforations in the tape to be printed on the same tape.

CHAFF.

Electromagnetic-wave reflectors in the form of narrow metallic strips used for creating radar echoes for confusion purposes. (Reference: CONFUSION REFLECTOR.)

CHAFF ELEMENT.

One resonant piece of chaff material.

CHAIN.

Network of radio or television stations connected by special telephone lines, coaxial cables, or radio relay links, so that all can simultaneously broadcast a program originating at a key station.

CHAIN REACTING PILE.

Quantity of radioactive substance, the atoms of which are bombarded by slow neutrons, and which keeps up its bombardment without outside influence.

CHAIN REACTION.

1. Action that, once started, is independent of any outside influence.
2. Chemical or nuclear process in which some of the products of a particular change assists the further occurrences of that change.

CHALLENGE.

Process carried out by one unit with the object of ascertaining the friendly or hostile character, or the identity of another unit.

CHALLENGE AND REPLY.

Procedure by means of a prearranged system whereby one transmitter requests authentication of another transmitter and the latter by a proper reply establishes its authenticity. In establishing identity, the challenge and reply is a prearranged method whereby one station identifies itself and requests the identity of another and the latter identifies itself.

CHAMFERED EDGE.

Inclined edge or narrow surface, such as the Z surface remaining on blanks or wafers, cut from Z crystal sections.

CHANCOM (CHANNEL COMMITTEE).**CHANGE.**

To alter by substitution; to give up for something else; to give or take one for the other. (Reference: RESCIND, SUPERSEDE.)

CHANNEL.

1. Path of electrical communication free from outside interference. The number of independent channels on a system or circuit (derived by frequency or time division) is measured by the number of separate communication facilities that can be provided by it.
2. Channel is also used frequently in conjunction with a figure(s) or letter(s) to identify a particular facility existing between two stations.
3. Portion of the frequency spectrum assigned to a transmitter. The frequency assignment is usually designated the center frequency of the channel. These are usually assigned by the FCC for the various radio services.

4. Portion of a storage medium of an electronic computer which is accessible to a given reading station. (Reference: TRACK.)

ADJACENT. Channel immediately above or below the reference channel.

ALTERNATE. Channel that is two channels above or below the reference channel.

ENGINEERED MILITARY. Circuit or channel leased from a commercial company and used by the military when required. Normally the inter-exchange portion of the leased circuit is used by the commercial company until the military requires its use. The local loop is continuously paid for while the whole circuit is paid for when placed in actual operation.

RADIO. Band of frequencies sufficiently wide to permit radio communication.

SIGNALING. Tone channel used for signaling purposes.

TELEGRAPH. Channel suitable for the transmission of telegraph signals.

TELEPHONE. Channel suitable for the transmission of telephone signals.

tone. Signaling circuit utilizing a frequency (on-off or frequency shift) as a means of transmission (usually audio frequency).

CHANNEL DESIGNATION.

One or more letters used to identify a station in conjunction with a channel number.

CHANNEL LETTER.

Letter assigned to identify a channel when two or more channels are maintained between two stations.

CHANNEL NUMBER.

1. Number allotted to identify a particular channel of a circuit or system.
2. Combination of letters and figures identifying a station, a channel, and a transmission.

CHANNELING.

Utilization of a modulation-frequency band for the simultaneous transmission from two or more communication channels in which the separation is accomplished by the use of carriers or sub-carriers, each in a different frequency band forming a subdivision of the main band.

Note. This covers a special case of multiplex transmission

CHARACTER.

1. One of a set of elementary marks or events which may be combined to express information.

Note. A group of characters, in one context, may be considered as a single character in another, as in the Binary-Coded-Decimal System.

2. One of a set of symbols used to present information on display tubes.

CHARACTER FORMULATION, METHOD OF.

1. A dot is equal to one unit length.
2. A dash is equal to three unit lengths.
3. An element is either a dot or a dash.
4. The space between elements is one unit length.
5. The space between characters is three unit lengths.
6. The space between words is seven unit lengths.
7. A character contains a given number of dot cycles.
8. The elements of overscored prosigns or special characters are formulated without an inter-character space between letters.
9. Punctuation marks: Period, comma, colon, question mark, apostrophe, hyphen or dash and other signs of writing, parenthesis, fraction bar and underscore, are formulated in the same manner as letter or figures.

CHARACTERISTIC.

1. Used to indicate the frequency versus amplitude response chart of almost any piece of equipment or any part of a transmission circuit.

2. Quality of any device indicating its behavior under certain conditions of use.

DYNAMIC. Relation between the instantaneous plate voltage and plate current of a vacuum tube as the voltage applied to the grid is increased or decreased.

MILITARY. Characteristics of equipment upon which its ability to perform desired military functions depend. Military characteristics include physical and operational characteristics but not technical details.

OPERATIONAL. Military characteristics which pertain primarily to the functions to be performed by equipment, either alone or in conjunction with other equipment.

PHYSICAL. Military characteristics of equipment which are primarily physical in nature such as weight, shape, volume, waterproofing, and sturdiness.

PICKUP SPECTRAL. Spectral responses of a device, including the optical parts, which convert radiation to electric signals, prior to any nonlinearizing and matrixing operations.

RADIATION. Identifying features of a radiated signal (such as frequency, and pulse width).

STATIC. Characteristics of a vacuum tube under conditions of no output load but with dc potentials on the tube electrodes.

TECHNICAL. Characteristics of equipment which pertain primarily to the engineering principles involved in producing equipment possessing desired military characteristics. For electronic equipment, technical characteristics include such items as circuitry, types, and arrangement of components.

TRANSFER. Relation between the voltage of one electrode and the current to another electrode of a vacuum tube, all other voltages being maintained constant.

CHARACTERISTIC CURVE.

Graph plotted to show the relation of changing values. An example would be a curve showing

how the plate current changes with variations in the grid voltage.

CHARACTERISTIC DISTORTION.

1. Displacement of signal transitions resulting from the persistence of transients caused by preceding transitions.

2. Repetitive displacement or disruption peculiar to specific portions of a teletype signal. There are two types of characteristic distortion; line characteristic distortion and equipment characteristic distortion.

CHARACTERISTIC IMPEDANCE.

1. Impedance which would be measured if that line were uniform in all respects throughout its length and of infinite length. This is tantamount to saying the line is so long that the measuring instruments cannot detect the presence or absence of any discontinuity such as a distant end. When one speaks of an open-wire impedance of 600 ohms or a cable impedance of 125 ohms, characteristic is implied.

2. Impedance which a transmission line would have if it were of infinite length. Usually expressed as the impedance which an infinitely long transmission line would present at its input terminal (in a lossless line the characteristic impedance is equal to $\sqrt{L/C}$). A line will appear to be infinitely long if terminated in its characteristic impedance.

3. Ratio of voltage to the current at every point along a transmission line on which there are no standing waves.

CHARACTERISTIC IMPEDANCE OF FREE SPACE.

Relationship between the electric and magnetic intensities of space due to the expansion of the impedance concept to electromagnetic fields.

CHARACTERISTIC VELOCITY.

Total of all the velocities to be either attained or overcome by a rocket.

CHARGE.

1. Electrical energy stored in a capacitor or battery or held on an insulated object.

2. Quantity of electrical energy held on an insulated object or in a capacitor under static conditions.

CHARGE DENSITY.

Charge per unit area on a surface or charge per unit volume in space.

CHARGED BODIES.

Bodies with an excess or deficiency of electrons.

CHARGER.

Device used to convert alternating current into a pulsating direct current which can be used for charging a storage battery.

CHARGING CURRENT.

1. Current that charges an electrical storage unit.
2. Current that restores energy to a storage battery.

CHASSIS.

Frame on which the parts of a radio receiver, transmitter, or other electronic unit are mounted.

CHATTER.

Vibration of a cutting stylus in a direction other than that in which it is driven.

CHECK.

1. Insure that the proper cryptographic aids have been employed and that the encryption was properly accomplished.
2. Process of partial or complete testing of the following:
 - a. Correctness of machine operations.
 - b. Existence of certain prescribed conditions within a computer.
 - c. Correctness of the results produced by a routine.

A check of any of these conditions may be made, automatically by the equipment, or may be programmed. (Reference: MARGINAL CHECKING.)

AUTOMATIC. Check performed by equipment built into a computer specifically for that purpose, and automatically accomplished each

time the pertinent operation is performed.

FORBIDDEN-COMBINATION. Check which tests for the occurrence of a nonpermissible code expression. A self-checking, or error-detecting code, uses expressions such that one or more errors in a code expression produces a forbidden combination. A parity check makes use of a self-checking code employing binary digits in which the total number of 1's (or 0's) in each permissible code expression is always even or always odd. A check may be made for either even parity or odd parity. A redundancy check employs a self-checking code which makes use of redundant digits called check digits.

PROGRAMMED. Electronic computer check consisting of tests inserted into the program of the problem and accomplished by appropriate use of the machine's instructions. A mathematical check (or control) is a programmed check of a sequence of operations which makes use of the mathematical properties of that sequence. A check routine or check problem is a routing or problem which is designed primarily to indicate whether a fault exists in the computer, without giving detailed information on the location of the fault. (Reference: DIAGNOSTIC ROUTINE, TEST ROUTINE.)

SELECTION. Electronic computer check, usually automatic, to verify that the correct register, or other device, is selected in the performance of an instruction.

TRANSFER. Electronic computer check, usually automatic, on the accuracy of the transfer of a word.

CHECK BEAM.

Radio beam indicating exact position to pilots preparing to level off for a landing.

CHECK GROUP.

Transmitted group which by giving the indicator or other information in a second form, or as a repetition, serves as a check.

CHECK POINT.

Designated reference point on a course line.

CHECK PROBLEM.

(Reference: CHECK, PROGRAMMED.)

CHECK ROUTINE.

(Reference: CHECK, PROGRAMMED.)

CHECK VALVE.

Device that permits passage of a fluid or gas in one direction only.

CHEESE ANTENNA.

Cylindrical parabolic reflector enclosed by two plates, perpendicular to the cylinder, so spaced as to permit the propagation of more than one mode in the desired direction of polarization.

CHIEF CONTROLLER.

Officer in the combat center responsible for overall operation of the center.

CHIP.

Material removed from a disk by the recording stylus in cutting the groove.

CHIRP.

Colloquial expression for a coded pulse. In coding the pulse, the carrier frequency is increased in a linear manner for the duration of the pulse, and when translated to an audio it sounds like a chirp.

CHOKER.

Coil used to impede the flow of pulsating direct current or alternating current by means of its self-inductance.

AUDIO-FREQUENCY. Inductor which is used to impede the flow of audio-frequency currents.

RADIO-FREQUENCY. Inductor which is used to impede the flow of radio-frequency currents.

SMOOTHING. Choke which is used to remove fluctuations in the output of a rectifier power supply or a generator.

SWINGING. Choke of which the effective inductance varies with the amount of current

passing through it. It is used in power-supply filter circuits.

CHOKER COIL.

1. Inductor (reactor) which is used to limit or suppress the flow of alternating current without appreciably affecting the flow of direct current.

2. Coil which allows direct current to pass, but retards alternating current.

3. Coil designed to have relatively large induction to prevent sudden changes in current flowing through its winding. (Reference: IMPEDANCE COIL, REACTOR.)

CHOKER FILTER.

Choke that is used in a filter circuit.

CHOKER FLANGE.

Flange put around a transmission line to prevent energy from feeding back along the outside of the line.

CHOKER JOINT.

1. Connector between two sections of transmission line in which the gap between sections to be connected is built out to form a series-branching transmission line carrying a standing wave, in which actual contact falls at or near a current minimum. The series-branching line is typically one-half wave in length. The connection then occurs at a quarter-wave point, and the closed end of the line is contained wholly within one of the sections.

2. Joint for connection two sections of waveguide together. It permits efficient energy transfer without the necessity of an electrical contact at the inside surfaces of the guide.

CHOKER-INPUT FILTER.

Filter which has a choke in series with the input, as distinguished from a capacitor-input filter.

CHOPPER.

1. Device for interrupting a current or a light beam at regular intervals. Choppers are frequently used to facilitate amplification.

2. Mechanical device which interrupts the light beam in the scanner of a facsimile transmitter at

a regular rate. This method is sometimes used to generate the carrier frequency for a facsimile signal. (Reference: LIGHT CHOPPER.)

CHOPPING.

Removal, by electronic means, of one or both extremities of a wave form at a predetermined level. (Reference: CLIPPING.)

CHRISTMAS TREE.

Information display stand used in combat information centers.

CHRISTMAS-TREE PATTERN.

Groove pattern obtained when recording the audio-frequency spectrum with a constant velocity recording system.

CHROMA.

Color quality characterized by its saturation only. A color television term.

CHROMA CONTROL.

Variable resistor which controls saturation by varying the level of chrominance signal fed to the demodulators. A color television term.

CHROMATIC COLOR.

Color that exhibits hue.

CHROMATICITY.

1. Combination of the hue and saturation attributes of color.
2. Term qualitatively descriptive of a color and dependent upon both hue and saturation, but without reference to brilliance.

CHROMINANCE.

Colorimetric difference between any color and a reference color of equal luminance, the reference color having a specified chromaticity. In standard color television transmission, the specified chromaticity is the zero subcarrier chromaticity.

CHROMINANCE CARRIER REFERENCE.

Continuous signal having same frequency as chrominance subcarrier and fixed phase with color burst. It is the phase reference of carrier chrominance signals for modulation or demodulation. A color television term.

CHROMINANCE CHANNEL.

Any path which is intended to carry the carrier color signal. A color television term.

CHROMINANCE COMPONENT.

Any component of two-dimensional chrominance vector. Used in color television.

CHROMINANCE DEMODULATORS.

I and Q demodulators which combine subcarrier reference signals from color synchronization and carrier chrominance signal from chroma band-pass amplifier circuits to derive I and Q color video voltages. Used in color television.

CHROMINANCE GAIN CONTROLS.

Variable resistors in red, green and blue matrix channels which individually adjust primary signal levels. Used in color television.

CHROMINANCE PRIMARY.

One of two nonphysical transmission primaries, I and Q, which have zero luminance. A color television term.

CHROMINANCE SUBCARRIER.

3.579545 MC signal modulated by chrominance video signals, whose modulation sidebands are added to a monochrome signal to convey chrominance. A color television term.

CHROMINANCE VIDEO SIGNALS.

Voltage output from red, green, or blue section of color television camera or receiver matrix.

CHROMOSPHERE.

One of the atmospheric shells of the sun. It lies above the photosphere and is best visible at time of total eclipse; can be observed spectroscopically at other times.

CHRONOGRAPH.

Mechanism for recording time signals on a revolving drum or moving tape, used for the precise measurement of time intervals.

CHRONOPHER.

Arrangement for automatically switching standard time signals from an observatory to telegraph lines.

CHRONOSCOPE.

Type of chronograph which measures short intervals of time.

CHUTE.

Opening the aircraft skin, with its associated duct, lip, and fairing through which chaff is dispensed.

CHUVA.

Term used in the grading of quartz crystals. It implies sparkling white needle-like inclusions outlined by minute bubbles or cavities.

CIA (CENTRAL INTELLIGENCE AGENCY).

Organization under the National Security Council that coordinates the intelligence activities of government departments and agencies. It correlates and evaluates intelligence relating to national security, and provides for disseminating this intelligence within the government.

CIB (CENTRAL INTELLIGENCE BOARD).

Panel of the Central Intelligence Agency.

CIC (COMBAT INFORMATION CENTER).

Agency charged with the function and responsibility of keeping the commanding officer and higher commands, together with other control stations, informed of the location, identity, and movements of friendly and/or enemy aircraft, large missiles, and surface ships within the air defense area.

CIC (COUNTER-INTELLIGENCE CORPS).

Organization responsible for activities to prevent enemy intelligence from accomplishing its mission.

CIE (COMMITTEE INTERNATIONALE d'ECLAIRAGE).**CIFAX (ENCIPHERED FACSIMILE COMMUNICATIONS).**

Communications in which security is accomplished by mixing pulses of key, produced by a key generator with the output of the facsimile converter. Plain text is recovered by subtracting the identical key at the receive terminal. Unauthorized listeners are unable to reconstruct the plain text unless they have an identical key generator and the daily key setting.

CIM (COMMUNICATIONS IMPROVEMENT MEMORANDUM).**CINC (COMMANDER-IN-CHIEF).**

1. Officer or official having supreme command of the armed forces of a country.
2. Commander of a theater of war.
3. Commander of a force directly under the Joint Chiefs of Staff.

Note. This abbreviation is used in combination only.

CINCAIRCENT (COMMANDER-IN-CHIEF ALLIED AIR FORCES CENTRAL EUROPE).**CINCAIREASTLANT (COMMANDER-IN-CHIEF AIR EASTERN ATLANTIC).****CINCAL (COMMANDER-IN-CHIEF ALASKAN COMMAND).****CINCAIRCENEUR (COMMANDER-IN-CHIEF ALLIED AIR FORCES CENTRAL EUROPE).****CINCARIB (COMMANDER-IN-CHIEF CARIBBEAN COMMAND).****CINCAWI (COMMANDER-IN-CHIEF AMERICA WEST INDIES STATION).****CINCEASTLANT (COMMANDER-IN-CHIEF EASTERN ATLANTIC).****CINCEI (COMMANDER-IN-CHIEF EAST INDIES STATION).****CINCEUR (COMMANDER-IN-CHIEF EUROPEAN COMMAND).****CINCFE (COMMANDER-IN-CHIEF FAR EAST COMMAND).****CINCFFESTA (COMMANDER-IN-CHIEF FAR EAST STATION).****CINCHAN (ALLIED COMMANDER-IN-CHIEF CHANNEL AND SOUTHERN NORTH SEA).****CINCIBERLANT (COMMANDER-IN-CHIEF IBERIAN ATLANTIC).****CINCLANDCENT (COMMANDER-IN-CHIEF ALLIED LAND FORCES CENTRAL EUROPE).****CINCLANT (COMMANDER-IN-CHIEF ATLANTIC).**

CINCMAIRCHAN (ALLIED MARITIME AIR COMMANDER-IN-CHIEF CHANNEL AND SOUTHERN NORTH SEA).

CINCMED (COMMANDER-IN-CHIEF BRITISH NAVAL FORCES IN THE MEDITERRANEAN).

CINCNE (COMMANDER-IN-CHIEF UNITED STATES NORTHEAST COMMAND).

CINCNELM (COMMANDER-IN-CHIEF NAVAL FORCES EASTERN ATLANTIC AND MEDITERRANEAN).

CINCNORAD (COMMANDER-IN-CHIEF NORTH AMERICAN AIR DEFENSE COMMAND).

Commanding officer of the combined command for air defense of the ConUS, Canada, Alaska, and the Northeast area.

CINCNORTH (COMMANDER-IN-CHIEF ALLIED FORCES NORTHERN EUROPE).

CINCPAC (COMMANDER-IN-CHIEF PACIFIC).

CINCNOEUR (COMMANDER-IN-CHIEF NORTHERN EUROPE).

CINCSOUTH (COMMANDER-IN-CHIEF ALLIED FORCES SOUTHERN EUROPE).

CINCWESTLANT (COMMANDER-IN-CHIEF WESTERN ATLANTIC).

CIO (COMBAT INTELLIGENCE OFFICER).

Member of a battle staff responsible for all intelligence matters.

CIPAP.

Changes in above itinerary authorized to proceed to such additional places as may be necessary for accomplishment of this mission.

CIPHER.

1. Cryptosystem in which arbitrary symbols or groups of symbols represent units of plain text or code or regular length (usually single characters), or in which units of plain text are rearranged, or both, in accordance with certain predetermined rules.

2. Procedure or method of secret writing.

3. Key to a secret method of writing.

OFF-LINE. Method of encryption which is not associated with a particular transmission system and in which the resulting cryptogram can be transmitted by any means.

ON-LINE. Automatic method of encryption associated with a particular transmission system, whereby signals are encrypted and passed direct to line, to operate the reciprocal equipment at the distant station.

CIPHER DEVICE.

Non-mechanical and non-electrical apparatus used for enciphering and deciphering.

CIPHER MACHINE.

Mechanical and/or electrical apparatus for enciphering and deciphering.

CIPHONY (ENCIPHERED TELEPHONE).

Security is accomplished by converting speech into a series of on-off pulses, and mixing these with the pulses supplied by a key generator. To recover the original speech the identical key must be subtracted and the resultant on-off pulses reconverted into the original speech pattern. Unauthorized listeners are unable to reconstruct the plain text unless they have an identical key generator and the daily key setting.

CIR (CIRCULAR).

Publication used to disseminate, within a given command, instructions or other matter of a general application and temporary duration.

CIRCLE OF LEAST CONFUSION.

Pencil of light, from a point source, that after passing through a lens does not converge to a theoretical point before diverging. The diameter of this pencil of light at the point of closest convergence is circle of least confusion.

CIRCUIT.

1. Electronic path between two or more points.

2. Number of conductors connected together for the purpose of carrying an electrical current.

3. Connected assemblage of electrical components such as resistors, capacitors, and inductors having desired electrical characteristics.

ACCEPTOR. Circuit which accepts a given signal; hence a circuit showing minimum impedance to that signal and therefore in series resonance at that frequency.

ALLOCATED-USE. Circuit in which one or more channels have been allocated for the exclusive use of one or more services by a proprietary service; it may be unilateral or joint circuit.

ANTI-HUNT. Feed-back type damping circuit incorporated in servo amplifiers for the purpose of suppressing electromechanical oscillations in the servo system.

ANTI-SIDETONE. Type of telephone circuit that acts to suppress sidetone relative to the output of the telephone.

APPLIQUE. Special circuit which is provided to modify existing equipment in order to allow for special usage. For instance, some carrier telephone equipment designed for ringdown manual operation can be modified through the use of an applique circuit to allow for use between points having dial equipment.

APPROVED. Circuit which has been approved for transmission of classified traffic in the clear.

AUTODYNE. Vacuum-tube circuit which serves simultaneously as an oscillator and a heterodyne detector.

BALANCED WIRE. Circuit whose two sides differ only by chance.

BILATERAL. Circuit wherein equipment at opposite ends is managed, operated, and maintained by different services.

BOOTSTRAP. Single-stage circuit in which the output load is connected between the negative end of the plate supply and the cathode, the signal voltage being applied between the grid and the cathode.

BUILDING-OUT. Short section of transmission line or a network which is shunted across a transmission line for the purpose of impedance matching.

CALL. Communication circuit between switching points used by the traffic forces for the transmission of switching instructions.

CASCADE. Two-stage amplifier circuit combining a grounded-cathode triode input section with a grounded-grid triode output. Used in VHF and UHF amplifiers to provide high signal-to-noise ratio.

CLAMPING. Circuit which adds a fixed bias to a wave at each occurrence of some predetermined feature of the wave so that the voltage or current of the feature is held at, or clamped to, some specified level.

COMMON BATTERY. Circuit using a centralized source of electrical energy.

COMMON USE. Circuit that is shared by two or more services, either on a concurrent or time sharing basis. It may be a unilateral, bilateral, or joint circuit.

CONTROLLER. Circuit established for the purpose of passing air-defense information from the controller of one installation to the controller of another installation.

CORD. Connecting circuit terminating in a plug at one or both ends and used at switchboard positions for establishing telephone connections.

DELAY. Circuit which is used to develop an output voltage a predetermined time after an input voltage is applied.

DETECTOR. Portion of a receiver which recovers the audible signal from the modulated RF carrier wave.

DUPLEX. 1. Method of operation in which all electrical communications between stations take place in both directions simultaneously.

2. Denotes a circuit which permits electrical communication simultaneously between stations in both directions. (Reference: CIRCUIT, HALF DUPLEX.)

ECCLES-JORDON. Two-stage resistance-coupled vacuum-tube amplifier with its output

similarly coupled back to its input. The two conditions of permanent stability are provided by the alternate biasing of the two stages beyond cut-off.

ENGINEERED. Leased longlines established in the ConUS for which only the local loops are continuously paid for. The leased longline or inter-exchange portion of the circuit is placed on a standby status by the commercial communications company and is placed in an actual operational status and paid for only when required by the command concerned.

ENGINEERING. Auxiliary circuit or channel (radio or wire) for use by operating and/or maintenance personnel for communications incident to the establishment, operation, maintenance, and control of communication facilities.

EQUIVALENT. Arrangement of common circuit elements whose characteristics, over a range of interest, are electrically equivalent to those of a more complicated circuit or device.

FLIP-FLOP. Trigger circuit having two conditions of permanent stability, with means for passing from one to the other by an external stimulus.

FOUR-WIRE. Two-way circuit using two paths so arranged that the electric waves are transmitted in one direction only by one path and in the other direction only by the other path. The transmission paths may or may not employ four wires.

FULL PERIOD. Circuit comprised of leased or Government-owned lines, which are in continuous use.

FULL-WAVE RECTIFIER. Circuit which provides current rectification throughout the full 360° of a sine wave.

GROUND-RETURN. Circuit which has a conductor (or two or more in parallel) between two points and which is completed through the ground or earth.

GROUNDING. 1. Circuit in which energy is carried one way over a metallic path and returned through the earth.

2. Circuit connected to earth at one or more points.

GROUPING. Circuit used to connect two or more switchboard positions together so that one operator may handle the several switchboard positions from one operator's set.

HALF DUPLEX. 1. Land wire circuit which is capable of transmissions in both directions but not simultaneously.

2. Circuit which permits unidirectional electrical communication between stations. (Technical arrangements may permit operation in either direction but not simultaneously. Therefore, this term will always be qualified by one of the following: S/O (for send only; R/O (for receive only); or S/R (for send or receive)).

IDENTIFICATION. Circuit which is established for the purpose of passing identification information relative to the movement of aircraft from CAA air-route traffic-control centers or military flight service centers to air-defense installations.

JOINT. Communications link in which the elements of more than one service participate by control, operation, management, etc.

LOAD. Complete circuit required to transfer power from source such as an electron tube to a load.

MAGNETIC. Complete path of magnetic lines of force.

METALLIC. Wire circuit of which the ground or earth forms no part.

MULTI-POINT. Circuit which is shared by two or more tributary stations.

OPEN. 1. Condition of an electrical circuit caused by the breaking of continuity of one or more conductors of the circuit.

2. Arrangement of conductors and equipment that depends upon lack of continuity for operation.

OPEN-WIRE. Circuit made up of conductors separately supported on insulators.

OSCILLATORY. Circuit containing inductance and/or capacitance and resistance, so connected that a voltage impulse will produce an output current which periodically reverses polarity.

OVERLAP TELLING. Tactical voice circuit which is established as an additional telling circuit for use between adjacent ground-controlled interception stations, early warning stations, and filter centers.

OWNER-USE. Circuit which provides communication for a single proprietary service. It is invariably a unilateral circuit.

PARALLEL. Circuit in which two or more components are connected across the same pair of lines or terminals so that current divides between the components.

PEAKING. Circuit capable of converting its input wave into a peaked waveform.

PHANTOM. Telephone or telegraph circuit obtained by superimposing an additional circuit on two existing physical circuits by means of repeating coils.

PLATE. Complete electric circuit connecting the cathode and plate of a vacuum tube.

PONEY. Local on-base circuit not having direct entry into a relay network.

PRIMARY. First, in electrical order, or two or more coupled circuits, wherein a change in current will induce a voltage in the other, or secondary, circuits.

PRIVATE LINE. Communication path suitable for any selected type of communications assigned for private use. The user leases this channel from a commercial company.

PUSH-PULL. Circuit containing two like elements which operate in 180° phase relationship to produce additive output components of the desired wave.

PUSH-PUSH. Circuit containing two vacuum tubes with the two grids operating in 180° phase relationship and the two plates in parallel.

RED LINE TRUNK. Trunks which are specifically identified on the switchboard as reserved for priority service.

REFLEX. Circuit arrangement in which the signal is amplified, both before and after detection, in the same amplifier tube or tubes.

RING. Hybrid T, in waveguide practice, having the physical configuration of a ring with radial branches.

RING DOWN. Circuit on which the signalling is with manually applied ringing current, usually 16, 20, 135, or 1,000 cycles.

SAMPLING. Circuit whose output is a series of discrete values representative of the values of the input at a series of points in time.

SCRAMBLING. Tactical voice circuit which is established between the controller and the fighter readiness room for the purpose of ordering fighter aircraft off the ground for interception missions.

SERIES. Electrical circuit in which the component parts are connected end-to-end to form a single continuous path for current.

SHORT. Low-resistance connection between two points of different potential in a circuit, usually accidental and usually resulting in excessive current flow that may cause damage.

SHUNT. Two or more electrical devices so connected that the line current may divide between them.

SIDE. Two-wire circuit forming one part of a phantom circuit.

SIMPLEX. Radio circuit which is capable of transmissions in both directions but not simultaneously.

SINGLE-SHOT TRIGGER. Trigger circuit in which one triggering pulse initiates one complete cycle of conditions ending with a stable condition.

SQUELCH. Circuit for preventing a radio receiver from producing an output in the absence of a signal having predetermined characteristics. A squelch circuit may be operated by signal energy in the receiver pass band, by noise quieting, or by a combination of the two. It may also be operated by a signal having special modulation characteristics.

STRAIGHT FORWARD. Circuit in which signalling is automatic and in one direction.

SWEEP. Circuit which produces at regular intervals a stable movement of the beam of the cathode-ray tube.

TERMINATING TRUNK. Circuit which is used to interconnect loop circuits.

TIME-DELAY. Circuit that delays the transmission of an impulse a definite period of time.

TRANSFER. Circuit which connects communications centers of two or more separate networks to accomplish the transfer of traffic between these networks.

TRIGGER. Circuit which has two conditions of stability, with means for passing from one to the other when certain conditions are satisfied, either spontaneously or through application of an external stimulus.

TRUNK. Circuit directly connecting two distant exchanges.

TUNED. Circuit in a resonant state.

TWO-WIRE. Metallic circuit formed by two conductors insulated from each other. The term is also used in contrast with four-wire circuit to indicate a circuit using one line or channel for transmission of waves in both directions.

UNBALANCED WIRE. Circuit whose two sides are inherently electrically unlike.

UNILATERAL. Circuit in which all equipment is managed and operated by a single service.

VIA TRUNK. Circuit which may be used to interconnect loop circuits via trunk circuits.

CIRCUIT BREAKER.

Automatic device which interrupts the flow of current in a continuous circuit when there is a predetermined deviation of current, voltage, or impedance from a standard value.

CIRCUIT CONTROL.

Authority assigned to a specific office on a toll circuit to direct over-all service continuity operations.

CIRCUIT CORD.

System of connecting electrical operating equipment to flexible conductors for connections and interconnections to jacks at a switchboard position.

CIRCUIT DIAGRAM.

Schematic drawing of the electrical connections of a communication device or equipment.

CIRCUIT DISCIPLINE.

Component of transmission security which includes the proper use of communications equipment, the adherence to prescribed frequencies, and operating procedures, remedial action, network control, monitoring, and training.

CIRCUIT DRAWING.

Presentation of the elements of an electrical circuit and its connection by lines and symbols.

CIRCUIT ELEMENT.

Basic constituent part of a circuit, exclusive of interconnections.

CIRCUIT LAYOUT CARD.

Printed form on which is entered the circuit name and number and a list of the circuit elements comprising the entire circuit together with operating information and limits for a toll circuit, channel, carrier system, or private line.

CIRCUIT MARKING TAG.

Tag that identifies a field wire or field cable circuit.

CIRCUIT NOISE.

Noise which is brought to the receiver electrically from a telephone system, excluding noise picked up acoustically by the telephone transmitters.

CIRCUIT NOISE LEVEL.

Ratio of the circuit noise at that point to some arbitrary amount of circuit noise chosen as a reference. This ratio is usually expressed in decibels above reference noise, abbreviated dbrn, signifying the reading of a circuit noise meter, or in adjusted decibels, abbreviated dbs, signifying circuit noise meter reading adjusted to represent interfering effect under specified conditions.

CIRCUITRY.

Adjective form for circuit.

CIRCULAR.

Publication used to disseminate, within a given command, instructions or other matter of a general application and temporary duration.

CIRCULAR ANTENNA.

Horizontally polarized antenna derived essentially from a half-wave antenna by bending the elements around a circular shape.

CIRCULAR ELECTRIC WAVE.

Wave with circular electrical lines of force.

CIRCULAR MIL.

Unit of area equal to the area of a circle with one mil (0.001 inch) diameter.

CIRCULAR PROBABLE ERROR.

Probable bombing error expressed in terms of the circle centered on the desired mean point of impact of a bombfall and containing half of the expected bombfall, excluding gross errors; also sometimes applied to the actual bombing error; with an airburst atomic bomb, the probable bombing error expressed in terms of the radius of a circle centered upon the desired ground zero, the radius from that point being projected horizontally to the point below the bomb burst. Gross errors are also excluded in atomic bombing; with

reference to guided missiles, a probable error expressed in terms of the radius of a circle within which one half of a given number of missiles can be expected to fall. Gross errors usually excluded.

CIRCULAR SCAN.

Scan used by most radar sets. It continuously rotates the antenna about a vertical axis so that the beam sweeps the horizon. The beam may be adjusted so that it sweeps at a constant angle above or below the horizon.

CIRCULAR SCANNING.

Scanning in which the direction of maximum response generates a plane or a right circular cone whose vertex angle is close to 180° .

CIRCULARITY.

Control on a PPI to give equal radial deflection on all bearings.

CIRCULARLY POLARIZED WAVE.

Elliptically polarized wave in which the ellipse is a circle in a plane perpendicular to the direction of propagation.

CIRCULATING REGISTER.

Register (or memory) consisting of a means for delaying information and a means for regenerating and reinserting the information into the delaying means. This is accomplished as the information moves in a space around a loop, returning to its starting place after a fixed delay.

CIRCUM (CIRCUMFERENCE).

1. Perimeter of a circle.
2. External boundary or surface.

CIRCUMFERENCE.

1. Perimeter of a circle.
2. External boundary or surface.

CIRCUMLUNAR ROCKET.

Rocket fired to orbit around the moon.

CIRVIS.

Communications instructions for worldwide reporting of vital intelligence sighting from aircraft. These instructions set forth who will

make such reports, what will be reported, the format of the reports, and how and to whom the reports will be submitted.

CISLUNAR SPACE.

Space between the earth and moon.

CITIZENS' RADIO BAND.

Band of frequencies between 460 and 470 MC assigned for the use of the general public for communication purposes.

CIVAD (CIVIL ADMINISTRATOR).

CIVIL AERONAUTICS ADMINISTRATION.

Organization, reporting to the Department of Commerce, that fosters development of civil airways, airports, and navigational aids; designates Federal airways and operates navigational aids along these airways and airports; supervises technical development work in aeronautics; and maintains and operates Washington National Airport.

CIVIL AERONAUTICS BOARD.

Board within the framework of the Department of Commerce that issues certificates to civil airlines, fixes rates, promulgates air safety standards and requirements for the airworthiness of aircraft; and investigates aircraft accidents.

CIVIL AIR DEFENSE WARNING.

System for alerting civilian agencies cooperating in the air-defense effort to conditions of air-defense warning.

CIVIL AIR PATROL.

Volunteer, semimilitary civilian auxiliary air organization, supervised and administered by the Air Force; and trained and equipped to assist in national and local emergencies.

CIVIL AIRWAY.

Path through the navigable airspace, identified by an area on the surface of the earth, designated or approved by the Administrator of Civil Aeronautics as suitable for interstate, overseas, or foreign commerce.

CJTF (COMMANDER JOINT TASK FORCE).

CKT (CIRCUIT).

1. Electronic path between two or more points.

2. Number of conductors connected together for the purpose of carrying an electrical current.

3. Connected assemblage of electrical components such as resistors, capacitors, and inductors having desired electrical characteristics.

CLAMP.

Gripping device for securing two or more articles together.

DROP WIRES. Assembly of a copper shell and a brass wedge with a wire bail, used to tighten a drop wire to a drive hook or a span clamp.

GRADE. Used to tighten the cable to its suspension strand to prevent it from slipping.

GROUND ROD. Clamping device to secure a ground wire to a rod driven into the earth.

GUY. Device used for making up ends of guys, strands, and dead ends.

STRAND. Clamp for tightening two sets of stranded conductors together or one back upon itself.

SUSPENSION. Clamp for securing a suspension strand to a pole.

CLAMPER REMOVAL.

Cutting out the clamper circuit of a radar set.

CLAMPING CIRCUIT.

Circuit which adds a fixed bias to a wave at each occurrence of some predetermined feature of the wave so that the voltage or current of the feature is held at some specified level.

CLASS A AMPLIFIER.

Amplifier in which the grid bias and alternating grid voltages are such that plate current flows at all times.

CLASS A BEARING.

Bearing which a direction finding operator may reasonably consider to be accurate to within plus or minus two degrees.

CLASS A MODULATOR.

Class A amplifier which is used specifically for the purpose of supplying the necessary signal power to modulate a carrier.

CLASS A OPERATION.

Operation of a vacuum tube with grid bias such that the operating point is at or near the center of the straight portion of its $I_p E_g$ (plate-current grid-voltage) characteristic curve. Plate current flows throughout the entire operating cycle and distortion is kept to a minimum.

CLASS A POSITION.

Position which may be expected to be accurate to within five nautical miles.

CLASS A TELEPHONE.

Telephone authorized for the transaction of official business, with access to all facilities, including long distance trunks at government expense.

CLASS AB AMPLIFIER.

Amplifier in which the grid bias and alternating grid voltages are such that plate current flows for appreciably more than half but less than the entire electrical cycle.

CLASS AB OPERATION.

Operation of a vacuum tube with grid bias such that the operating point is approximately half way between class A and class B.

CLASS AB₁.

Circuit operation in which the input signal never exceeds the bias voltage, so that the grid is never driven positive and no grid current flows.

CLASS AB₂.

Circuit operation in which the input signal is greater than the bias voltage, driving the grid positive and causing grid current to flow.

CLASS B AMPLIFIER.

Amplifier in which the grid bias is approximately equal to the cut-off value so that the plate current is approximately zero when no exciting grid voltage is applied, and so that plate current flows for approximately one-half of each cycle when an alternating grid voltage is applied.

CLASS B BEARING.

Bearing which a direction finding operator may reasonably consider to be accurate to within plus or minus five degrees.

CLASS B MODULATOR.

Class B amplifier which is used specifically for the purpose of supplying the necessary signal power to modulate a carrier. In such a modulator the class B amplifier is normally connected in push-pull.

CLASS B OPERATION.

Operation of a vacuum tube with grid bias at or very near cutoff, so that the operating point is at the lower bend of the $I_p E_g$ with no input signal to the grid, and flows, for approximately the positive half of each cycle of the input signal.

CLASS B POSITION.

Position which may be expected to be accurate to within 20 nautical miles.

CLASS B TELEPHONE.

Telephone authorized for the transaction of official business, but may be used for unofficial service, with access to long distance trunks at subscriber's expense.

CLASS C AMPLIFIER.

Amplifier in which the grid bias is appreciably greater than the cut-off value so that the plate current in each tube is zero when no alternating grid voltage is applied, and so that plate current flows for appreciably less than one-half of each cycle when an alternating grid voltage is applied.

CLASS C BEARING.

Bearing which a direction finding operator may reasonably consider to be accurate to within plus or minus ten degrees.

CLASS C OPERATION.

Operation of a vacuum tube with grid bias considerably greater than cutoff. The plate current is zero with no input signal to the grid, and flows for appreciably less than one-half of each cycle of the input signal.

CLASS C POSITION.

Position which may be expected to be accurate to within 50 nautical miles.

CLASS C TELEPHONE.

Telephone authorized for the transaction of official business, but restricted to intra-base communication, with no access to long-distance trunks.

CLASS D TELEPHONE.

Telephone restricted to special classes of service such as fire alarm, guard alarm, and watchman services.

CLEAR.

1. When security of military information is not involved in plain text, messages are ordinarily sent in the clear rather than in cipher or code.

2. To restore a storage or memory device to a prescribed state, usually that denoting zero. (Reference: RESET.)

CLEAR TEXT.

Text or language which conveys an intelligible meaning in the language in which it is written, with no hidden meaning.

CLEARANCES.

Usual meaning of separation, with special application to the separation of telephone plant from power plant or hazardous structures.

CLEARING ENDS.

Operation of removing the sheath from the end of a cable and eliminating all moisture and checking for crosses, shorts, and grounds in preparation for testing.

CLEAVAGE.

Tendency of a crystalline substance to split along definite planes, called cleavage planes, which correspond to the layers of atoms making up the crystalline structure.

CLICK FILTER.

Device to reduce or eliminate the key clicks in a radiotelegraph transmitter. (Reference: KEY-CLICK FILTER.)

CLIMBERS, LINEMAN'S.

Shaped irons with straps for fastening to the legs, equipped with sharp spurs, for climbing poles.

CLINOMETER.

Instrument for measuring the degree or percent of slope.

CLIPPER.

1. Device which automatically limits the instantaneous value of the output to a predetermined maximum value. The term is usually applied to devices which transmit only portions of an input wave lying on one side of an amplitude boundary.

2. Radio circuit which removes those portions of a signal wave exceeding a specified amplitude.

CLIPPER-LIMITER.

Transducer which gives output only when the input lies above a critical value and a constant output for all inputs above a second higher critical value. (Reference: SLICER.)

CLIPPING.

Perceptible mutilation of signals or speech syllables during transmission.

CLN (COLON).

Punctuation character(:) used in writing and printing.

CLOCK.

Primary source of electronic computer synchronizing signals.

CLOSE CONTROL.

Positive control exercised by an intercept director with communications contact over which he can deliver vectoring instructions to a friendly airborne object. Such instructions are based upon computations derived from radar surveillance of the target and interceptor.

CLOSE COUPLING.

Degree of coupling greater than the critical coupling.

CLOSE SUPPORT MISSION.

Mission with the primary purpose of direct close support of friendly ground forces in the accomplishment of their immediate objective and/or preventing front line enemy forces from carrying out their objectives. It requires close coordination of air and ground activities, prior to, and

during the mission, and may include ground or air control, air to air control, and the positive establishment of bombing and strafing lines or zones prior to the mission.

CLOSE-UP.

Shot taken at close range in which the object or person practically fills the screen.

CLOSED.

Status indicating an air base is officially closed, for any reason, to the operation of aircraft.

CLOSED CIRCUIT.

1. Program source that is not broadcast for general consumption but is fed to remote monitoring units by wire.
2. Completed circuit.

CLOSED CIRCUIT SIGNALING.

Signaling in which current flows in the idle condition, and a signal is initiated by increasing or decreasing the current.

CLOSED CIRCUIT SYSTEM.

Telegraph system in which, when no station is transmitting, the circuit is closed and current flows through the circuit.

CLOSED CIRCUIT TELEVISION.

Television signals which are not broadcast but are transmitted over a closed circuit and received only by interconnected receivers.

CLOTH, WIPING.

Material used by splicers in working molten lead into position when completing a splice.

CLOUD CHAMBER.

1. Mechanism for making subatomic particles visible.
2. Closed shape containing saturated water vapor which, upon sudden expansion, reveals the presence of condensation particles by the visible droplets formed upon them, or in which rapidly moving particles are revealed by the streaks of droplets, or tracks.

CLOUD TRACK.

Row or streak of droplets formed in a cloud

chamber by the passage through it of an ionizing particle, the path of which is thus revealed.

CLOVER-LEAF ANTENNA.

Antenna having radiating units shaped like a four leaf clover.

CLUTCH.

Mechanical element which allows the synchronous motor to rotate while the phasing mechanism is stopped. This allows a facsimile machine to be phased without stopping the synchronous drive mechanism.

CLUTTER.

Unwanted signals, echoes, or images on the face of a cathode-ray tube which interfere with observation of desired signals. (Reference: GRASS, NOISE.)

Cm⁻¹.

Unit of frequency employed chiefly in infrared spectroscopy. One cm-1 is equal to one divided by the wave length in centimeters.

CMA (COMMA).

Punctuation character (,) used in writing and printing.

CMBT (COMBAT).

Action or situation in which hostile military forces are in direct contact.

CMLC (CHEMICAL CORPS).**CMTC (COMMUNICATIONS MESSAGE TRAFFIC CONTROL).**

Unit responsible for the authorization, supervision, and regulation of on-call patching and teleconference service in a tape-relay center. This responsibility is delegated to this unit by the Director of Communications-Electronics.

CMTCU (COMMUNICATION MESSAGE TRAFFIC CONTROL UNIT).**CN (CONTROL TOWER, NAVY).****CNC (CHIEF OF NAVAL COMMUNICATIONS).****CNJC (CABLE NETWORK JOINT COMMITTEE).****CNO (CHIEF OF NAVAL OPERATIONS).****CO (COMMANDING OFFICER).**

CO.

International Telecommunications Union designation for station open to official correspondence exclusively.

CO-CHANNEL INTERFERENCE.

Interference caused on one communication channel by a transmitter operating in the same channel.

COARSE CONTROL.

Control used for making rough adjustments of any of the adjustable features of electronic equipment such as intensity, gain, volume, tuning, etc.

COAST STATION.

Land station in the maritime mobile service carrying on a service with ship stations (a coast station may secondarily communicate with other coast stations, incidents to communicate with ship stations).

COASTING PHASE OR COAST-IN-FLIGHT.

Period in multi-stage rocket flight when no power is applied, the rocket moving inertially until another engine fires.

COATED LENS.

Lens with air-glass surfaces coated with a thin transparent film of such index of refraction as to minimize the light loss by reflection.

COAX (COAXIAL).

Having one axis within another, as a coaxial cable, with a single cylindrical conductor suspended in the center of another conductor.

COAXIAL ANTENNA.

Antenna comprised of a quarter-wavelength extension to the inner conductor of a coaxial line and a quarter-wavelength radiating sleeve which closely surrounds the outer conductor of the coaxial line, but is connected to the outer conductor only at its end.

COAXIAL CABLE.

Cable, used as a transmission line, consisting of one conductor, usually a small copper tube or wire, within and insulated from another conductor of larger diameter, usually copper tubing

or copper braid. The outer conductor may or may not be grounded. Radiation from this type of line is practically zero. (Reference: CONCENTRIC LINE, COAXIAL LINE.)

COAXIAL LINE.

Long metal tube having at its center a conductor supported by insulators. It is used as a transmission line for radio or television signals. (Reference: PIPELINE, COAXIAL CABLE, CONCENTRIC LINE.)

COAXIAL-LINE FREQUENCY METER.

Shorted section of coaxial line which acts as a resonant circuit and is calibrated in terms of frequency or wave-length.

COAXIAL STUB.

Short length of coaxial which is joined as a branch to another coaxial. Frequently a coaxial stub is short-circuited at the outer end and its length is so chosen that a high or low impedance is presented to the main coaxial in a certain frequency range.

COAXIALLY FED LINEAR ARRAY.

Beacon antenna having a uniform azimuth pattern.

COBALT.

Metal having slight magnetic characteristics; combined with iron and steel to make special alloys used in permanent magnets.

COC (COMBAT OPERATIONS CENTER).

Physical facility from which territorial or regional supervision is exercised over air-defense operations performed by subordinate organizations.

CODAN (CARRIER-OPERATED DEVICE, ANTI-NOISE).

Device commonly used to mute the audio output of a receiver during standby or no carrier periods. Usually, the AVC voltage is used to control a squelch tube, which in turn controls the bias applied to the first audio tube so that it is permitted to operate only when a carrier is present at the receiver input. Thus, the receiver output is heard when a signal is received, and is muted when no signal is present.

CODAN LAMP.

Visual indication that a usable transmitted signal has been received by a particular radio receiver.

CODAN (CARRIER-OPERATED ANTI-NOISE) RECEIVER.

Noise automatically suppressed by reduction of receiver gain during intervals when no carrier is present. Gain is restored to normal by arrival of a carrier.

CODE.

1. System of communication in which arbitrary groups of symbols represent units of plain text of varying length. Codes may be used for brevity or for security.
2. Coded book (or document) arranged in systematic form, containing a list of letters, syllables, words, phrases or sentences each accompanied by one or more arbitrary groups of symbols used as equivalents in cryptograms.
3. System of signaling utilizing dot-dash-space, mark-space or other method where each letter or figure is represented by prearranged combinations.
4. System of characters and rules for representing information.
5. Loosely, the set of characters resulting from the use of a code.
6. Prepare a routine in machine language for a specific computer.

7. Encode; to express given information by means of a code. (Reference: LANGUAGE.)

BASIC. Code book which is used solely as part of a composite system, the groups of which are never transmitted unenciphered but are used only to provide groups for use with cipher tables or pads.

BREVITY. Code which has as its sole purpose the shortening of messages rather than the concealment of their content.

CABLE MORSE. Three-element code, used mainly in submarine cable telegraphy, in which

dots and dashes are represented by positive and negative current impulses of equal length, and a space by absence of current.

COLOR. System of colors used to specify the electrical value of a radio part or to identify terminals and leads.

COMBAT. Code or cipher, the purposes of which are simplicity and speed in addition to as much security as is possible without prejudicing unduly such simplicity and speed.

HATTED. Randomized code consisting of an encoding section. The plain text groups are arranged in alphabetical or other significant order, accompanied by their code groups arranged in a non-alphabetical or random order.

INTERNATIONAL MORSE. Code on which letters and numbers are represented by specific groupings of dots and/or dashes. The International Morse Code is used especially in radio, telegraph and visual communications.

INTERNATIONAL SIGNAL. Code adapted by many nations for international communication. The code uses combinations of letters to stand for words, phrases and sentences. The letters are transmitted by the hoisting of international alphabet flags or by transmitting their dot and dash equivalents in the International Morse Code.

N-ARY. Code in which each code element may be any one of N distinct kinds or values.

NONHATTED. Plain text elements are arranged in alphabetical or numerical order accompanied by their code groups also arranged in alphabetical, numerical, or other systematic order.

ONE-PART. Code in which the plain text elements are arranged in alphabetical or numerical order accompanied by their code groups also arranged in alphabetical, numerical or other systematic order.

PANEL OR SURFACE. Prearranged code designed for visual communications between ground units and friendly aircraft.

PREARRANGED MESSAGE. Code adapted for the use of units which require special or technical vocabulary and composed almost exclusively of groups representing complete or nearly complete messages.

PRIVACY. Code employed to protect the contents of a message from casual reading by unauthorized individuals, but which does not afford (and is not intended to afford) any security against organized cryptanalysis.

PYROTECHNICS. Prearranged code in which meanings are assigned to the various colors and arrangements of pyrotechnics.

RINGING. System of spaced rings to call in different subscribers on the same line.

TELEGRAPH. Impulse combinations corresponding to letters and figures used in telegraphic communications.

TELETYPEWRITER. Code used in teletype-writer communication in which each code group is made up of five units or elements, of equal length. These elements are known as marking or spacing impulses.

TERNARY. Code in which each code element may be any one of three distinct kinds of values.

TWO-PART. Randomized code, consisting of an encoding section and a decoding section. In the encoding section the plain text groups are arranged in an alphabetical or other significant order accompanied by their code groups arranged in a nonalphabetical or random order. In the decoding section the code groups are arranged in alphabetical or numerical order and are accompanied by their meanings as given the encoding section.

CODE BEACON.

Beacon having the characteristics of a code light.

CODE BOOK.

Book or document, used in a code system, arranged in a systematic form containing a list of letters, syllables, words, phrases, or sentences each accompanied by one or more arbitrary

groups of symbols for use as equivalents in cryptograms.

CODE CHARACTER.

Particular arrangement of code elements, used in a code to represent a single value or symbol.

CODE ELEMENT.

Discrete condition or event in a code.

CODE GROUP.

Fixed arbitrary combination or permutation of symbols assigned to represent a plain text element in a code book.

CODE WORD.

Word which conveys a meaning other than its conventional one, prearranged by the correspondents.

CODED PASSIVE REFLECTOR.

Object intended to reflect Hertzian waves and having variable reflecting properties according to a predetermined code, for the purpose of producing an indication on a radar receiver.

CODER.

1. Device which sets up a series of signals in code form.
2. Beacon circuit which takes the trigger pulse output of a discriminator, forms it into a series of pulses, then feeds these pulses to a modulator circuit.

CODING DELAY.

Arbitrary time delay in the transmission of pulse signals, usually inserted at the transmitting station.

CODING DISK.

Disk with small projections for operating contacts to give a certain predetermined code to a transmission.

CODRESS.

Type of message in which the complete address is contained only in the encrypt text.

COEF (COEFFICIENT).

1. Number or symbol placed before another symbol or combination of symbols as a multiplier.

2. Number expressing the amount of some change or effect under certain conditions.

COEFFICIENT OF COUPLING.

Numerical indicator of the degree of coupling existing between two circuits.

COEFFICIENT OF REFLECTION.

Square root of the ratio of the reflected power leaving a reflecting surface to the power incident to the same surface.

COEFFICIENTS.

System of transmission ratings denoting the impairment to teletypewriter signals in various types of wire or radio facilities.

COFFING HOIST.

Block and tackle used in telephone outside plant construction work for pulling the slack from a suspension strand.

COHERENT MTI.

Process of matching the phase of a reference oscillator to that of the transmitter at each transmitted pulse. This can be done by allowing a sufficient amount of power from the transmitter to enter the resonant cavity of the oscillator, which is then forced into step with the transmitter.

COHERENT PULSE OPERATION.

Method of pulse operation in which the phase of the radio frequency waves is maintained through successive pulses.

COHERENT REJECTION.

Classified definition. (Reference: AFM 100-50.)

COHO.

Type of local oscillator which is used to provide a reference phase in a coherent pulse doppler system. It is locked in phase to the transmitter pulse every time a pulse is sent out. (Reference: STALO.)

COI (COMMUNICATIONS OPERATING INSTRUCTIONS).**COIL.**

Turns of wire wound on an iron core or on a coil form made of insulating material so as to be self-supporting. A coil offers considerable

opposition to the passage of alternating current but very little opposition to direct current.

CHOKES. Inductor (reactor) which is used to limit or suppress the flow of alternating current without appreciably affecting the flow of direct current. (Reference: IMPEDANCE COIL.)

EXPLORING. Loop of wire, with or without a magnetic core, for locating current by induction. Used with a current indicating device.

HEAT. Protective device which grounds or opens a circuit, or does both, by means of a mechanical element which is allowed to move when the fusible substance that holds it in place is heated above a predetermined temperature by current in the circuit. Provides overcurrent protection.

HEAT DUMMY. Substitute for a heat coil which is not operated by excessive current. Used when protection is not desired.

HELMHOLTZ. Variometer, having horizontal and vertical balanced coil windings, which is used to vary the angle of phase difference between any two similar wave forms of the same frequency.

HYBRID. Four-winding coil wound and connected so that incoming and outgoing currents in a two wire path are separated and kept from interfering with each other.

IMPEDANCE. Coil primarily used to impede the flow of alternating current by its inductive reactance. (Reference: RETARDATION COIL, CHOKES COIL.)

INDUCTION. 1. Transformer used in a telephone set for interconnecting the transmitter, receiver and line terminals.

2. Transformer for converting interrupted direct current into high voltage alternating current.

LOADING. Coils of wire around a magnetic core constituting inductances which can be inserted in a circuit at regular intervals to improve transmission.

PHANTOM Originally a coil used in a phantom circuit for impedance matching. Now generally, any coil, side or phantom in a phantom circuit. When the term is used the meaning should be made clear.

REPEATING. 1. Audio-frequency transformer, usually having a one-to-one ratio, which is used to connect two sections of telephone line inductively so as to permit the formation of simplex and phantom circuits.

2. General term for a transformer in a speech or signal circuit.

RETARDATION. Telephony, a high-inductance coil which offers high impedance to voice-frequency currents, but permits the passage of ringing current.

SIDE CIRCUIT. One of a pair of repeating coils used on each of two pairs of wire to derive a phantom circuit.

SIMPLEX. Repeating coil used on a pair of wires to derive a simplex circuit.

SOLENOID. Tubular coil of wire which, when traversed by an electric current, will act as a magnet and tend to pull a movable iron core to a central position.

VOICE. Moving coil which activates the diaphragm of a dynamic speaker.

COINCIDENCE.

Agreeing as to position; corresponding. In a coincidence-type range finder, when the two half images of a distant object are aligned, they are said to be in coincidence.

COINCIDENCE AMPLIFIER.

Amplifier which has an output only when two pulses are applied simultaneously to the tube.

COINCIDENCE PRISM.

Compound prism, consisting of a system of small prisms cemented together, used in a coincidence range finder to bring the images from the two objectives to a single eyepiece for viewing.

COINCIDENCE RANGE FINDER.

Self-contained distance measuring device operating on the principle of triangulation. Half images, observed from points of known distance, are matched to determine the range.

COLD.

Idiomatic expression applied in general to electrical circuits that are disconnected from voltage supplies and at ground potential. Opposed to "hot", which means "carrying an electrical charge."

COLD CATHODE.

Cathode that is not heated. Electrons may be pulled out of it by a sufficiently high voltage applied to an anode. The cathode of a phototube may be considered in this class since it emits electrons when exposed to light rather than heat.

COLD CATHODE TUBES.

Tubes in which no external source is used for heating the cathode. These include vacuum tubes such as photoelectric cells and rectifiers, gas glow tubes such as voltage regulators.

COLINEAR ARRAY.

Antenna array having a string of half wave elements excited in phase.

COLLATION.

Classified definition. (Reference: AFM 100-50.)

COLLECT CHARGES.

Collect charges are those paid by the addressee covering the cost of a received telegraph message, or the charges paid by the called party covering the cost of a received telephone toll call.

COLLECTION.

Classified definition. (Reference: AFM 100-50.)

COLLECTIVE ADDRESS GROUP.

Address group which represents two or more commands, authorities, activities, units, or any combination thereof, and includes the commander of the organization or group and all subordinate commanders therein.

COLLECTIVE CALL SIGN.

Call sign which represents two or more facilities, commands, authorities, or units. The collective

call sign for any of these includes the commanders thereof and all subordinate commanders therein.

COLLECTIVE LENS.

Convex or positive lens used in an optical system to collect the field rays and bend them to the next optical element.

COLLECTOR.

Electrode in a velocity-modulated vacuum tube on which the spent electron bunches are collected.

COLLIMATE.

1. Render parallel to a certain line or direction.
2. Render parallel, as rays of light.
3. Adjust the line of sight of an optical instrument so that it is in its proper position relative to the other parts of the instrument.

COLLIMATING TELESCOPE.

Telescope with an outer cylindrical surface that is concentric with its optical axis.

COLLIMATION.

Process of aligning the axis of the optical elements to the mechanical axis of an instrument.

COLLIMATOR.

Optical device for artificially creating a target at a predetermined distance (a beam of parallel rays of light) used in testing and adjusting certain optical instruments.

COLLINEAR ARRAY.

Antenna array in which halfwave elements are arranged end-to-end on the same vertical or horizontal line.

COLLISION COURSE.

Course toward a selected object which, if maintained, will cause the aircraft or missile to pass directly over, or into the object.

COLLISION FREQUENCY.

Number of collisions between an electron and a molecule of a gas per unit time. It is dependent on the velocity of the electron and the mean free path between molecules.

COLON.

Punctuation character (:) used in writing and printing.

COLOR BANDS.

Bands of a smoky color arranged with a quartz crystal parallel to prism or rhombohedral growth faces.

COLOR BREAK-UP.

Spurious color caused by difference in observation condition from one field to the next. Color television term.

COLOR BURST.

Color television portion of the composite color signal comprising the few sine-wave cycles of color subcarrier frequency (and the color burst pedestal, if present) which is added to the horizontal pedestal for synchronizing the color-carrier reference.

COLOR CODE.

1. System of colors used to specify the electrical value of a radio part or to identify terminals and leads.
2. System of colors applied to the wrapping of cable conductors to distinguish one from another.

COLOR DECODER.

Section, including demodulators and phase splitters which derive red, green, and blue signals from composite color video signal. Color television term.

COLOR DIFFERENCE SIGNAL.

Combination of I and Q signals in proper polarity which are added to Y monochrome signal to produce signals representing tristimulus values (red, green, blue) transmitted. Resulting signals applied to the television picture tube.

COLOR EDGING.

Spurious color at the boundaries of differently colored areas in a picture.

COLOR FRINGING.

Spurious colors introduced into picture by change in position of televised object from field to field.

COLOR GAMUT.

Restricted range of colors which can be matched by primaries.

COLOR KILLER.

Television circuit between color sync and video sections which cuts off chrominance channel when monochrome signal is being transmitted.

COLOR KINESCOPE.

Cathode-ray picture tube, used in color television receivers, in which electrical signals are translated into a visible picture in natural color on a luminescent screen usually comprising several different color-emitting phosphors.

COLOR PHASE.

Phase difference between color television I or Q and carrier chrominance signal.

COLOR PHASE ALTERNATION.

Periodic changing of color phase of one or more components of the color television subcarrier between two sets of assigned values.

COLOR PICTURE SIGNAL.

Monochrome component plus subcarrier modulated with color information, excluding synchronizing signals. Color television term.

COLOR SIGNAL.

General term for any signal, excluding luminance or monochrome, which controls chromaticity values. Color television term.

COLOR SUBCARRIER.

Color television, carrier whose modulation sidebands are added to the monochrome signal to convey color information.

COLOR TELEVISION.

Television system that reproduces an image in its original colors.

ACHROMATIC. Shade of grey from black to white, color absent.

COLOR TEMPERATURE.

Color temperature of a source of light is the temperature at which a black body must be operated to give a color matching that of the source in question.

COLOR TRANSMISSION.

Transmission of a signal wave which represents both the brightness values and the chromaticity values in the television picture.

COLOR-CARRIER REFERENCE.

Color television continuous signal having the same frequency as the color subcarrier and having fixed phase with respect to the color burst. This signal is used for the purposes of modulation at the transmitter and demodulation at the receiver.

COLORIMETRY.

Measurement of color.

COLPITTS OSCILLATOR.

Vacuum tube oscillator in which a parallel-tuned tank circuit is connected between grid and plate, with the tank capacitance containing two voltage-dividing capacitors in series, with their common connection at cathode potential. When the two voltage-dividing capacitances are the plate-to-cathode and the grid-to-cathode capacitances of the tube, the circuit is known as the ultra-audion oscillator.

COLUMN.

1. Vertical sequence of symbols or groups thereof.
2. Electronic computer synonym for place.

COLUMN CO-ORDINATE.

Symbol normally at the top of a matrix identifying a specific column of cells.

COM (COMMAND, COMMANDER, COMMANDANT, COMMUNICATION).

COMA.

Aberration affecting the sharpness of images off the axis (caused by the fact that rays from an object point off the axis) passing through a given circular zone of the lens, come to a focus in a circle rather than a point, and the circles formed by rays through different zones are of different sizes and are located at different distances from the axis. The image of a point object is comet shaped.

COMAIRCANLANTSUBAREA (COMMANDER AIR CANADIAN ATLANTIC SUB AREA).

COMAIRNELANTSUBAREA (COMMANDER AIR NORTHERN EUROPEAN ATLANTIC SUB AREA).

COMAIRNORTH (COMMANDER ALLIED AIR FORCES NORTHERN EUROPE).

COMAIRSOUTH (COMMANDER ALLIED AIR FORCES SOUTHERN EUROPE).

COMALAIRNOREUR (COMMANDER ALLIED AIR FORCES NORTHERN EUROPE).

COMALNAVNOEUR (COMMANDER ALLIED NAVAL FORCES NORTHERN EUROPE).

COMAT (COMMANDER MILITARY AIR-TRANSPORT SERVICE).

COMBAT.

Action or situation in which hostile military forces are in direct contact.

COMBAT AIR PATROL.

Air patrol over any area or force usually for the purpose of intercepting and attacking hostile airborne objects before they can reach their objective.

COMBAT CENTER.

Physical facility from which a NORAD exercises supervision of air-defense operations by its subordinate SAGE direction center. The combat center is equipped with AN/FSQ-8 Combat Control Central.

COMBAT CODE.

Code or cipher, the purposes of which are simplicity and speed in addition to as much security as is possible without prejudicing unduly such simplicity and speed.

COMBAT INFORMATION CENTER.

Agency charged with the function and responsibility of keeping the commanding officer and higher commands together with other control stations, informed of the location, identity, and

movements of friendly and/or enemy aircraft, large missiles, and surface ships within the air defense area.

COMBAT INTELLIGENCE OFFICER.

Member of the battle staff responsible for all intelligence matters.

COMBAT OPERATIONS CENTER.

Physical facility from which territorial or regional supervision is exercised over air-defense operations performed by subordinate organizations.

COMBAT SCENE OF ACTION FREQUENCY.

Simplex channel for tactical communications in combat operations in which two or more elements of the same, or different, arms are employed in circumstances precluding the prior agreement of a communication plan.

COMBAYOFBISCAYSUBAREA (COMMANDER BAY OF BISCAY SUB AREA).

COMBINATION CABLE.

Cable having conductors grouped in both quads and pairs.

COMBINATION DISTRIBUTOR FRAME.

Frame which combines the functions of a main distributing frame and an intermediate distributing frame.

COMBINED ROUTING INDICATOR PLAN.

1. Plan designed to meet requirements of allied military tape relay communications which are world-wide in scope.
2. Plan designed to meet requirements of allied military teletypewriter (teleprinter) communications which are confined to a localized theater.

COMBINED TELEPHONE SET.

Telephone set including in a single housing all the components required for a complete telephone set except the handset which it is arranged to support.

COMBINER.

Circuit for mixing video, trigger, and scan data from synchronizer for modulation of link.

COMBRAX (COMMODORE RCN BARRACKS).

COMCANLATNSUBAREA (COMMANDER CANADIAN ATLANTIC SUB AREA).

COMCM (COMMUNICATIONS COUNTERMEASURES).

COMD (COMMAND).

COMDG (COMMANDING).

COMDT (COMMANDANT).

COME ALONG.

Slang expression which refers to a block and tackle, or other equipment, used to remove the slack from a strand of wire, messenger, or suspension strand.

COMET.

Loose body of gases and solid matter revolving around the sun.

COMFLOGWING (COMMANDER FLEET LOGISTIC AIR WING).

COMFLIBASTILLES (COMMANDER U S ATLANTIC FLEET BASES ANTILLES).

COMINT (COMMUNICATIONS INTELLIGENCE).

Communications intelligence is the information obtained from the analysis of intercepted foreign communication transmissions.

COMJEF (COMMANDER JOINT EXPEDITIONARY FORCE).

COML (COMMERCIAL).

1. Produced or producible in large quantities and available as mercantile.
2. Aircraft used as a common carrier by a company or private firm.

COMLANDDENMARK (COMMANDER ALLIED LAND FORCES DENMARK).

COMLANDGREECE (COMMANDER ALLIED LAND FORCES GREECE).

COMLANDNORWAY (COMMANDER ALLIED LAND FORCES NORWAY).

COMLANDSOUTH (COMMANDER ALLIED LAND FORCES SOUTHERN EUROPE).

COMLANDSOUTHEAST (COMMANDER ALLIED LAND FORCES SOUTHEAST EUROPE).

COMLANDTURKEY (COMMANDER ALLIED LAND FORCES TURKEY).

COMLOGNET (COMBAT LOGISTICS NETWORK).

World-wide integrated network comprised of land lines, cable, and radio channels designed to carry Air Force digitalized data traffic between all major air commands, Air Force bases, air materiel areas, depots, Air Force contractors, and other department of defense data systems points of entry and other locations as authorized.

COMM (COMMUNICATION).

Means of conveying information of any kind from one person or place to another except by direct unassisted conversation or correspondence.

COMM CEN (COMMUNICATION CENTER).

Agency responsible for the receipt, transmission, and delivery of messages. It normally consists of a message center section, message section, cryptocenter section, and such other means of operation sections (radio, wire, teletypewriter, etc) required by the headquarters or echelon served by the communication center.

COMM Z (COMMUNICATIONS ZONE).

That area adjoining the combat zone and containing lines of communication, establishments for supply and evacuation, and other facilities and agencies required for the immediate support and maintenance of troops in the field.

COMMA.

Punctuation character (,) used in writing and printing.

COMMAND.

1. Set of characters which defines an operation.
2. One of a set of several signals (or groups of signals) which occurs as a result of an electronic computer instruction.

COMMAND GUIDANCE.

Form of missile guidance wherein control signals transmitted to the missile from an outside agency cause it to traverse a directed path through space.

COMMAND HEADING.

Vector or steer calculated by a computer (based upon a computer-generated interception point) to enable interceptors to complete an assigned mission.

COMMAND NET.

Communication system or network by which a commander maintains control of subordinate headquarters or units under his command.

COMMAND POST.

1. Physical facility within a combat center or direction center from which division or sector supervision or air-defense operations is exercised.
2. Station of a unit's headquarters where the commander and the staff perform their activities. In combat, a unit's headquarters is often divided into echelons.

COMMAND TRACKING.

Process by which a computer performs automatic tracking of interceptors; in this process, the computer uses inserted or computer-generated heading, speed, and altitude, rather than that information derived from the automatic-tracking program.

COMMANDER IN CHIEF.

1. Officer or official having supreme command of the armed forces of a country.
2. Commander of a theater of war
3. Commander of a force directly under the Joint Chiefs of Staff.

COMMANDER IN CHIEF NORTH AMERICAN AIR DEFENSE COMMAND.

Commanding officer of the combined command for air defense of the ConUS, Canada, Alaska, and Northeast area.

COMMANDING GENERAL.

General officer commanding an installation or organization, such organization normally being a wing or larger organization. Usually called a commander in the Air Force.

COMMARMOC (COMMANDER MARITIME FORCES, MOROCCO).**COMMERCIAL FACILITIES.**

Facilities for which direct charge is made for handling messages.

COMMON BATTERY.

System of current supply where all dc energy for a unit of a telephone system is supplied by one source in a central office or exchange.

COMMON BATTERY CIRCUITS.

Telephone circuits through which the talking and signaling currents of electricity are supplied from a central office source, usually a central office switchboard installation.

COMMON BATTERY SYSTEM.

Telephone system which has current supplied from a central source.

COMMON BATTERY TELEPHONE SET.

Telephone set for which both the transmitter current and the current for signaling by the telephone station are supplied from a centralized power source.

COMMON BATTERY TELEPHONE SYSTEM.

Telephone system which has current supplied to it from a central source.

COMMON SERVICING.

Servicing performed by one department for one or more departments for which no charge is made to the other departments.

COMMON SUPPLIES.

Supplies common to two or more services.

COMMON SYSTEM.

System of air navigation and air traffic control facilities designed to meet the requirements of all uses of air space in the ConUS, except tactical military units. The basic plans for the system were developed by special committee 31 of the radio technical commission for aeronautics. The plan outlines the requirement for development of new equipments and their integration into existing systems over an extended period of time.

COMMON USE CIRCUIT.

Circuit that is shared by two or more services,

either on a concurrent or time sharing basis. It may be a unilateral, bilateral, or joint circuit.

COMMON-USER CHANNELS.

Communication channels which are available to all Air Force agencies for transmission of command, administrative, and logistic traffic.

COMMUNICATION.

Means of conveying information of any kind from one place to another except by direct, unassisted conversation or correspondence.

AGENCY OF. Facility which embraces personnel and equipment necessary to provide communication.

AGENCY OF SIGNAL. Includes all personnel and equipment necessary to operate a signal communication installation. It may include one or more means of communication.

AIR-GROUND. Method or means of conveying information between aircraft in flight and ground stations.

INTERIOR. Rapid communication facilities, electrical, acoustical, or mechanical, that interconnect the various operational spaces of a naval vessel, aircraft, or other activity.

JOINT. Common use of communication facilities by two or more services of the same nation.

LINE. Use for communication purposes of a physical path, such as wire or waveguide, between terminals.

RADIO. Use of radio for communication facilities.

VISUAL. Use of optical signs, such as flags and lights, for communication purposes.

COMMUNICATION BAND.

Communication band consists of the band of frequencies due to modulation (including keying) necessary for a given type of transmission.

COMMUNICATION CENTER.

Agency responsible for the receipt, transmission, and delivery of messages. It normally

consists of a message center section, message section, cryptocenter section, and such other means of operating sections (radio, wire, teletypewriter, etc.) required by the headquarters or echelon served by the center.

COMMUNICATION CHANNEL.

Part of a radio or wire circuit, or a combination of wire and radio, which connects two or more terminals.

COMMUNICATION FACILITY.

Device or system, in its entirety, that promotes the sending of intelligence from one point to another.

COMMUNICATION GUARD, RADIO.

Communication station designated to listen for and record transmission, and to handle traffic on a designated frequency for a certain unit or units.

COMMUNICATION SECURITY.

Protection resulting from all measures designed to deny to unauthorized persons information of value which might be derived from a study of communications.

COMMUNICATIONS COUNTERMEASURES.

Electronic countermeasure used specifically against communications.

COMMUNICATIONS COVER.

Classified definition. (Reference: AFM 100-50.)

COMMUNICATIONS COVER AND DECEPTION.

Classified definition. (Reference AFM 100-50)

COMMUNICATIONS DECEPTION.

Use of devices, operations, and techniques with the intent of confusion or misleading the user of a communications link or a navigation system (Reference: AFM 100-50.)

**COMMUNICATIONS IMPROVEMENT
MEMORANDUM.**

COMMUNICATIONS INTELLIGENCE.

Intelligence developed from listening in on, intercepting, or observing enemy, or potential enemy, communication transmissions. (Reference: AFM 100-50.)

COMMUNICATIONS JACKAL.

Series of airborne barrage jammers, AN/ART-7, -9, -10 and -11. These sets vary in power from 105 watts to 150 watts and together cover the frequency band from 27 to 57 mc. They are frequency-modulated and operate unattended during flight to jam AM enemy signals. Each set weighs approximately 75 pounds.

COMMUNICATIONS JAMMING.

Deliberate interference with radio communications by electronic means. It may consist of partial or complete obliteration of the message content, it may take the form of annoyance or distraction to the operator, or it may modify or add to the message.

COMMUNICATIONS MESSAGE TRAFFIC CONTROL.

Unit responsible for the authorization, supervision, and regulation of on-call patching and teleconference service in a tape-relay center. This responsibility is delegated to this unit by the Director of Communications-Electronics.

COMMUNICATIONS NETWORK.

Interconnection of specific organizations or geographical locations by communications means for functional or command purposes. Two or more networks interconnected make up a communications system. For instance, the AIRCOM-NET, AIROPNET, and SACCOMNET are networks which are a part of the AIRCOM. (Reference: COMMUNICATIONS SYSTEM.)

COMMUNICATIONS OFFICER.

Officer who manages communications activities including construction, installation, operation, maintenance, repair, and modification of ground communications equipment such as radio, teletype, telephone, telegraph, facsimile, cryptographic, and television, and commands communications units.

COMMUNICATIONS OPERATIONS INSTRUCTIONS.

Series of instructions issued for the technical control and coordination of communications agencies of a command.

COMMUNICATIONS SECURITY.

Protection resulting from all measures designed to deny unauthorized persons, information of value which might be derived from the possession and study of electrical communications.

COMMUNICATIONS SERVICE AUTHORIZATION.

Call or subsidiary contract upon the general contracts with the communications companies to provide specific facilities and services within the prescribed limits of the Communications Service Authorization.

COMMUNICATIONS ZONE INDICATOR.

Device developed by Raytheon to indicate whether or not long distance high frequency broadcasts are successfully reaching their destinations. The equipment will also indicate approximately how strong the signals are when they arrive. It could be used by the Voice of America to check the effectiveness of their broadcasts, and also as an aid in increasing the efficiency and reliability of any long distance radio communications system. To test a signal, COZI sends out from the radio stations own antenna, a radar beam along the same path taken by the radio waves.

The interruption in broadcasting is so brief the listeners do not notice the break. The radar beam returns and is measured for both its intensity and the time interval of its travel. From these measurements of "back-scatter energy," the equipment produces values that tell the operator, with a high degree of accuracy, the "skip distance" of the wave and its probable strength when it arrives at its destination. Under certain conditions, it is also possible to detect various evidences of deliberate "jamming" through variances in the calculated energy of the back-scatter return.

COMMUNICATIONS SYSTEM.

Series of interconnected communications networks, circuits, stations, and facilities for fulfilling communications needs on a broad scale. (Reference: COMMUNICATIONS NETWORK.)

COMMUNICATIONS/SIGNAL CENTER.

Agency charged with the responsibility for receipt, transmission and delivery of messages. It normally includes message center, transmitting and receiving facilities.

COMMUNICATIONS-ELECTRONICS.

Field of specialization which covers radio and wire communications and electronic devices and their uses.

COMMUNICATIONS-ELECTRONICS DOCTRINE.

Series of Air Force manuals authorized by AFR 100-13. These manuals contain C-E directives, data, instructions, and related information covering basic concepts, policies, planning systems, and operating instructions. Specialized information required by C-E staffs to plan, implement, and operate C-E systems and facilities is included in CED Manuals.

COMMUNICATIONS-ELECTRONICS FACILITY.

Combination of communications and/or electronics material which will, when properly installed and manned, function to satisfy the operational requirement for a communications-electronics service.

COMMUNICATIONS-ELECTRONICS FIELD.

Element of air power concerned specifically with the collection and transmission of information. Communications-electronics provides the facilities by which commanders, separated from the elements of their command, may exercise administrative, logistical, and tactical direction. It provides facilities to enhance or control the operational capabilities of aircraft or missiles. The field of communications-electronics does not include communications that take place by methods of direct conversation or correspondence.

COMMUNICATIONS-ELECTRONICS INSTRUCTIONS.

Replaced by a series of Air Force Manuals in the 100 series called communications-electronics doctrine.

COMMUNICATIONS-ELECTRONICS OFFICER.

Member of the battle staff responsible for all matters pertaining to proper functioning of radio, wire, and electronic devices.

COMMUNICATIONS-ELECTRONICS SCHEME.

Document which translates an approved operational requirement into the engineering data and supply information necessary to obtain action to place a communications-electronics facility in an operational condition.

COMMUNICATIONS-ELECTRONICS SCHEME DESIGNATOR.

Combination of symbols, numbers, and letters which are used to correlate the communications-electronics scheme to the port call authorization during the preparation, processing, and installation phases. In essence, the designator is a short title which can be used for reference, reporting, and control purposes.

COMMUNICATIONS-ELECTRONICS STAFF OFFICER.

Officer who has charge, under the direction of his organizational commander, of all military communications duties. This includes books, papers, and devices connected therewith, including electromagnetic and electro-mechanical apparatus. He has the duty of collecting and transmitting information for the Air Force by electromagnet vehicles, and all other duties usually pertaining to military communications-electronics.

COMMUNITY AUTOMATIC EXCHANGE.

Small dial office serving a community.

COMMUTATION.

Mechanical process of converting the alternating current which flows in the armature of dc generators into the dc generator output.

COMMUTATOR.

1. Device used on electric motors or generators to maintain a unidirectional current.
2. Device used in a multiplex system to connect the line to various channels.

COMNAVGER (COMMANDER U S NAVAL FORCES IN GERMANY).

ComNavMarianas (COMMANDER U S NAVAL FORCES, MARIANAS).

ComNavNorth (COMMANDER ALLIED NAVAL FORCES NORTHERN EUROPE).

ComNavSouth (COMMANDER ALLIED NAVAL FORCES SOUTHERN EUROPE).

ComNorEastSubArea (COMMANDER NORTH EASTERN SUB AREA).

ComOceanAnt (COMMANDER OCEAN ATLANTIC).

COMP (COMPOSITE).

Operating one telephone and two dc telegraph or teletypewriter circuits over one pair of wires.

COMPANDER.

Device which combines the function of a compressor with an expander. It is a combination of a compressor at one point in a communication path for reducing the volume range of signals, followed by an expander at another point for restoring the original volume range. Usually its purpose is to improve the ratio of the signal to the interference entering in the path between the compressor and expander. Permits the transmission of a signal having a small volume range.

COMPANDING.

Process in which compression is followed by expansion. Companding is often used for noise reduction, in which case the compression is applied before the noise exposure and the expansion after the exposure.

COMPARATOR.

Optical instrument for measuring rectangular coordinates of points on a plane surface, such as a photographic plate.

COMPASS.

Instrument used to determine direction.

FLUXGATE. Gyrostabilized remote indicating compass which is used as a compass and azimuth control system in conjunction with automatic pilots.

RADIO. Direction-finding radio set which provides indications concerning the bearings of

radio transmitters with respect to a reference point.

COMPASS BEARING.

Bearing measured relative to magnetic north.

COMPASS COURSE.

Course in which the direction of the reference line is north, as indicated by a magnetic compass.

COMPASS DIRECTION.

Direction with reference to magnetic north indicated by a compass.

COMPASS ERROR.

Angle formed by the north-south compass line and the true meridian passing through the center of the compass.

COMPASS LOCATOR.

Non-directional radio beacon of low power associated with a recognized instrument landing system.

COMPASS NORTH.

Direction indicated by the north-seeking end of the needle of a magnetic compass.

COMPASS TRANSMITTER.

Sensitive element of a compass system which picks up the directive force of the earth's magnetic field.

COMPATABILITY.

Nature of a color television system which permits normal monochrome reception of color transmissions by unaltered monochrome receivers.

COMPENSATED VOLUME CONTROL.

Device in a radio receiver that changes the tonal balance of the loudspeaker output for different output levels to compensate for corresponding variations in the response characteristics of the human ear.

COMPENSATION THEOREM.

If an impedance ΔZ is inserted in a branch of a network, the resulting current increment produced in any branch in the network is equal to the current that would be produced at that point by a compensating voltage acting in series with the modified branch, whose value is $-\Delta Z$, where

I is the original current that flowed where the impedance was inserted before the insertion was made.

COMPENSATOR.

1. Portion of a direction finder which automatically applies to the direction indication, all, or a part of, the correction for magnetic deviation.
2. Device that compensates for electrical losses, such as a cable compensator.

COMPLEMENT.

1. Number, in an electronic computer, whose representation is derived from the finite positional notation of another by one of the following:
 - a. True complement: Subtract each digit from one less than the base; then add 1 to the least significant digit, executing all carries required.
 - b. Base minus one's complement: Subtract each digit from one less than the base.

2. To form the complement of a number.

Note. In many machines, a negative number is represented as a complement of the corresponding positive number.

COMPLEMENTARY BAR.

Rectangular cut at the complement of the AT or BT angle in X-sections of crystals.

COMPLEMENTARY COLORS.

Two colors are complementary if when added together, such as by projection, they produce white light.

COMPLEMENTARY WAVE.

Wave brought into existence at the ends of a coaxial cable, or two conductor transmission line, or at any discontinuity along the line.

COMPLETE CARRY.

(Reference: CARRY.)

COMPLETE DIFFUSION.

Diffusion in which the diffusing medium scatters the light incident upon it so that none is regularly reflected or transmitted, and objects,

from which the light originally comes, cannot be seen sharply defined by the reflected or transmitted light.

COMPLEX REFLECTORS.

Structure or group of buildings with many reflection surfaces, oriented in many different directions.

COMPLIANCE.

Acoustical and mechanical equivalent of capacitance.

COMPONENT.

1. Major item, not a complete operating set, which may be part of an operating set, or which may be used to extend the functions or to supplement the facilities of the set.
2. Electrical or mechanical unit in an assembly or subassembly of radio parts.

COMPOSITE.

Method of simultaneously operating telephone and telegraph or teletypewriter circuits by the use of a single pair of conductors.

COMPOSITE CABLE.

Cable in which conductors of different gauges or types are combined under one sheath.

COMPOSITE COLOR SIGNAL.

Color signal, including blanking, luminance and chrominance information, and sync signals. Color television term.

COMPOSITE PICTURE SIGNAL.

Television signal which consists of the blanked picture signal and the synchronizing signals.

COMPOSITE SET.

Device, consisting of capacitors and retard coils, which permits the operation of a ground-return telegraph circuit on each wire of a pair.

COMPOSITION PLANE OR SURFACE.

Name applied to the boundary surface between two crystals growing together symmetrically.

COMPOUND LENS.

Two or more separate pieces of glass.

COMPRESSION.

1. Diminishing of the audio volume range of the input signal so that the minimum output signal contains less noise and the maximum output signal less distortion.
2. Reduction in the black-to-white amplitude range or frequency swing occurring between two points in the system or reduction of the contrast of a facsimile signal.
3. Process in which the effective gain applied to a signal is varied as a function of the signal magnitude, the effective gain being greater for small signals.

COMPRESSOR.

1. Transducer which, for a given amplitude range of input voltages, produces a smaller range of output voltages. One important type of compressor employs the envelope of speech signals to reduce their volume range.
2. Electrical device which compresses the volume range of a signal.

COMPROMISE, CRYPTOGRAPHIC.

Discovery of cryptographic information or plain text of messages by unauthorized persons through cryptanalytic methods.

COMPROMISE, PHYSICAL.

Availability of material to unauthorized persons through loss, capture, recovery by salvage, defections of individuals, unauthorized viewing, or any other physical means.

COMPROMISE NETWORK.

1. Network employed in conjunction with a hybrid coil to balance a subscriber's loop, which is adjusted for an average loop length or an average subscriber's set, or both, to secure compromise (not precision) isolation between the two directional paths of the hybrid.
2. Hybrid balancing network which is designed to balance the average of the impedances that may be connected to the switchboard side of a hybrid arrangement of a repeater.

COMPUTER.

1. Instrument for calculating various quantities

such as range, speed, altitude, etc., from the information supplied.

2. Machine for carrying out calculations.
3. Machine for carrying out specified transformations on information.
4. Electronic instrument which facilitates the solution of mathematical problems.

ACTIVE. One of two computers at a SAGE center actually performing the air-defense mission.

ANALOG. Physical system, used in electronics, together with means of control for the performance of measurements (upon the system) which yields information concerning a class of mathematical problems.

COURSE-LINE. Airborne equipment which accepts bearing information from a VHF omnidirectional range receiver and distance information from the distance-measuring equipment interrogator and processes it to provide deviation information and distance-to-go information with respect to a pilot-selected way point within the coverage of the VHF omnidirectional range and distance-measuring equipment indications to instruments mounted on the instrument panel of an aircraft.

DIGITAL. Computer in which quantities are represented in numerical form and which generally is made to solve complex mathematical problems by iterative use of the fundamental processes of addition, subtraction, multiplication, and division.

FLIGHT-PATH. Computer which performs all of the functions of a course-line computer and, in addition, provides means for controlling the altitude of an aircraft in accordance with a desired plan of flight.

COMRAZ.

System for determining the air-to-air or ground-to-air range between any two stations equipped with communications (AN/ARC-27) and range/azimuth (AN/ARA-25) equipment. A range-determining feature of COMRAZ increases the functional utility of existing navy communications equipment as a navigational aid.

COMSECACT (COMMUNICATION SECURITY ACTIVITY).

ComUSLantSubArea (COMMANDER U S ATLANTIC SUB AREA).

ComYard (COMMANDER OF THE DOCKYARD).

Used to identify area dockyard commanders, such as ComYardNorfolk, meaning the commander of the dockyard, Norfolk, Virginia.

CON (CONSUL).

Official appointed by the government to reside in a foreign country, to care for the commercial interests of the citizens of the United States.

CON (CONTROL).

1. Parts of a digital computer which effect the carrying out of instructions in proper sequence, the interpretation of each instruction, and the application of the proper signals to the arithmetic unit and other parts in accordance with this interpretation.

2. One or more of the components in any mechanism responsible for interpreting and carrying out manually-initiated directions. Sometimes called manual control.

ConAc (CONTINENTAL AIR COMMAND).

One of the major air commands in the United States, the headquarters of which is located at Mitchell AFB, New York.

CONBAL (CONSOLIDATED BASE ALLOWANCE LIST).

CONCAVE.

Hollowed and rounded like the inside of a sphere.

CONCAVE LENS.

Lens that is curved inward on one side and is flat on the other side.

CONCAVE-CONVEX LENS.

Lens that is curved inward on one side and is curved outward on the other side.

CONCENTRIC CABLE.

1. Cable in which one conductor is accurately centered inside another. Used primarily for the transmission of telephone, radio, and television signals.

2. Cable, used as a transmission line, consisting of one conductor, usually a small copper tube or wire, within and insulated from another conductor of larger diameter, usually copper tubing or copper braid. The outer conductor may or may not be grounded. (Reference: COAXIAL CABLE.)

CONCENTRIC LINE.

Long metal tube having at its center a conductor supported by insulators. It is used as a transmission line for radio or television signals. (Reference: PIPELINE, COAXIAL CABLE, COAXIAL LINE.)

CONCEPT OF OPERATIONS.

Verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regard to an operation or series of operations. The concept of operations frequently is embodied in campaign plans and operations plans. The concept is designed to give an overall picture of the operation. It is included primarily for additional clarity of purpose.

COND (CONDUCTOR).

1. Material which permits the passage of an electric current.

2. Transmission, distribution, or wiring system which actually carries the current.

3. Live wire in an open wire system.

CONDENSATION CODE.

Code which has as its sole purpose the shortening of messages rather than the concealment of the content.

CONDENSER.

1. Lens or lens system designed to concentrate the illumination from a light source upon a limited area.

2. Air or gas compressor.

3. Tubing in a relatively cold bath.

4. Two or more conductors separated by a non-conductor (dielectric) such as glass, paper, air, oil or mica. (Reference: CAPACITOR.)

ELECTROLYTIC. Capacitor which makes use of a very thin, chemically formed, dielectric.

CONDENSER MICROPHONE.

Microphone which depends for its operation on variations in capacitance.

CONDENSER PICK-UP.

Phonograph pick-up, the electrical output of which is generated by a mechanical variation of its capacitance.

CONDITIONAL JUMP.

Electronic computer instruction which will cause the proper one of two (or more) addresses to be used in obtaining the next instruction, depending upon some property of one or more numerical expressions or other conditions.

CONDITIONAL TRANSFER OF CONTROL.

(Reference: CONDITIONAL JUMP.)

CONDOR.

CW navigational system, similar to BENITO, which automatically measures bearing and distance from a single ground station. The distance is determined by phase comparison, and the bearing by automatic direction finding. Distance and bearing are displayed on a cathode ray indicator.

CONDUCTANCE.

Ability of a material to conduct or carry an electric current. It is the reciprocal of the resistance and is expressed in mhos.

CONDUCTION CURRENT.

Power flow parallel to the direction of propagation expressed in watts per square meter.

CONDUCTIVITY.

Measure of the ability of a material to act as a path for electron flow. It is the reciprocal of resistivity and is expressed in mhos/meter.

1. Material which permits the passage of an electric current and has relatively low resistance.
2. Transmission, distribution, or wiring system which actually carries the current.
3. Line wire in an open wire system.

CONDUIT.

Tube of tile, steel, wood, or other material through which cables can be passed.

CONDUIT RUN.

Arrangement of conduit providing one or more continuous ducts between two points. (Reference: DUCT BANK.)

CONE.

1. One of the two types of light-sensitive elements or visual cells in the retina of the eye which permit sight.
2. Cone-shaped part of a loudspeaker that actually moves the air.

CONE OF NULLS.

Antenna practice, a conical surface formed by directions of negligible radiation.

CONE OF SILENCE.

Inverted-cone-shaped space directly over the aerial towers of some forms of radio beacons in which signals are unheard or greatly reduced in volume.

CONELRAD (CONTROL OF ELECTROMAGNETIC RADIATIONS).

Plans for controlling electromagnetic radiations during times of emergency, as directed by Executive Order 10312, 10 December 1951. The purpose is to deny the enemy aircraft the use of electromagnetic radiations for navigation, while still providing essential services. With reference to commercial broadcast stations, procedures might include sequential transmission of the same program material on one frequency by several stations in the same general area. Another procedure is to have all stations in a general area broadcast the same program material simultaneously on the same frequency. This would prevent an aircraft from taking a bearing on any one station. The two assigned frequencies for CONELRAD operations by commercial broadcast stations are 640 KC and 1240 KC. The authority for promulgating the CONELRAD plans under Executive Order 10312 has been delegated to the Federal Communications Commission in the case of non-government radio services, and to the responsible operating agency in the

case of government radio services. A Department of Defense CONELRAD plan and detailed implementing plans have been prepared.

CONFERENCE COMMUNICATIONS.

Communications facilities whereby direct speech conversation may be conducted between three or more locations simultaneously.

CONFERENCE CONNECTION.

Special connection for a telephone conversation among more than two stations.

CONFIGURATION.

Relative distribution or arrangement of parts in a structure, as in an antenna array.

CONFUSION REFLECTOR.

Radio wave reflector used for creating echoes for confusion purposes against radars, proximity fuzes, and guided missiles.

CONICAL HORN.

Horn with an equivalent cross-sectional radius which has a constant rate of increase along its axis.

CONICAL SCAN.

Process of swinging the radar beam about an axis a few degrees off the center of the beam so that the beam describes a cone in space, the apex of which is located at the antenna.

CONICAL SCANNING.

Type of antenna beam scanning in which the tilt angle is fixed so that the axis of the RF beam generates a cone, the vertex angle of which is usually from five to 10 degrees.

CONJUGATE DISTANCE.

For every position that an object may occupy with respect to a lens, there is a corresponding position for the image. The distances of object and image from the nodal points of the lens are called conjugate distances.

CONJUGATE FILTERS.

Classified definition. (Reference: AFM 100-50.)

CONJUGATE FOCAL POINTS.

Pairs of points on the principal axis of a mirror or lens so located, that light emitted from either point will be focused at the other.

CONJUGATE IMAGE RAYS.

Rays connecting each of a set of conjugate image points with its particular perspective center.

CONJUGATE IMPEDANCES.

Impedances having resistance components which are equal and reactance components which are equal in magnitude but opposite in sign.

CONJUNCTIVE ADDRESS GROUP.

Address group, the meaning of which is incomplete unless used in combination with one or more other address groups.

CONNECTION, ROSIN.

Connection or joint of a conductor to a piece of equipment or another conductor, supposedly securely soldered, but actually held together by rosin flux.

CONNECTION DIAGRAM.

Sketch showing the position of components and connections in an apparatus.

CONNECTOR.

1. Coupling device that joins two or more parts, as two cables.
2. Name given to the switch or relay group systems that find the line being called as a result of digits being dialed. This switch also has the function of causing interrupted ringing voltage to be placed on the called line or of returning a busy tone to the calling party if the line is busy.

BRIDGING. Screw fastener for joining drop, bridle, or other wires to open-wire conductors, or to fasten two open wires at a test point.

CABLE. Connector used to splice, terminate, or tap a power cable.

REGULAR. Final unit in the dialing link by which the calling subscriber is connected to the called subscriber. In the all relay system, it is operated by the last three digits dialed. It consists of control, counting, sequence, and the final tens and units relays.

TEST. 1. Device, usually operated by a spring, to connect the leads from portable meters and apparatus to other equipment or conductors.

2. Manual connector controlled by an operator or from the test-desk to connect them to a subscriber's line.

TEST AND OPERATOR'S VERIFICATION.

Circuit connecting the attendant switchboard operator or wire chief's test desk to any line through the connector switch or test or verification through the test distributor circuit.

TRUNK-HUNTING. Circuit which automatically hunts for an idle line in a group of lines that services one station, department, or office.

WIRE CHIEF TEST. Circuit by means of which the wire chief or switchboard operator may connect to any line through the regular connector circuits for test or verification.

CONNECTORS.

Switching mechanism for connecting a trunk to a subscriber line or another line. It may be designed to hunt for an idle terminal.

CONOSCOPE.

Instrument used for determining the position of the Z or optical axis of a quartz crystal.

CONS (CONSTRUCTION).

1. Process, art, or manner of constructing; act of devising and forming; also a thing constructed, structure.
2. Act or result of construing, interpreting, or explaining a declaration or fact; interpretation.

CONSOL.

Long range radio aid to navigation, the emissions of which, by means of their audio frequency modulation characteristics, enable bearings to be determined.

CONSOLAN.

Long-range, directional navigation system, AN/FRN-5, that transmits a slowly rotating keyed radio field pattern. It is the American version of the German SONNE and British CONSOL systems. CONSOLAN differs from these systems in the following respects. Two radiators instead of three are used to obtain a line of position. Each radiator is excited by its own transmitter,

and RF energy is transmitted between towers over RF cable at one-half the operating frequency. These modifications have minimized night effect as a source of error. The operating principle of CONSOLAN is based upon the interference pattern resulting from the excitation of two vertical radiators with equal radio frequency intensity but variable relative phase. In-phase excitation produces a distinctive pattern of a certain number of lobes. Out-of-phase excitation (180°) produces a distant pattern with the same number of lobes but oriented so that the peaks of the in-phase lobes correspond to the nulls of the out-of-phase lobes. The number of lobes depends on the spacing between radiators in wavelengths. The two radiators then are alternately excited in-phase and out-of-phase, the duration of one excitation being four times as long as the other, thus producing dots and dashes. After each switching operation, the RF phase between radiators is shifted five electrical degrees until a total of 180° is reached. The relative intensities between the dots and dashes change gradually as the keying cycle progresses. The precision of the system varies with azimuth and with maximum accuracy on the perpendicular bisector of the line of antennas. The system is capable of 10- to 20-mile accuracy at 1500 miles range. The only airborne equipment required is a standard radio receiver tunable to the CONSOLAN frequency. This system has been extensively tested, and is currently in use in Europe.

CONSOLE.

1. Control and monitoring position.
2. Main operating unit of a radar or electronic group in which indicators and general controls are installed.

CONSONANCE.

Either electrical or acoustical resonance occurring between bodies or circuits which are not connected directly with each other.

CONSTANT.

1. Anything invariable or not subject to change.
2. In mathematics, a magnitude that is supposed not to change its value in a certain discussion or stage of investigation.

DECAY. Exponential constant of a heterogeneous mixture of radioactive material calculated from its observed rate of decay.

DIELECTRIC. Ratio of the capacitance of a capacitor with a given dielectric between the electrodes to the capacitance with air as the dielectric.

FAST TIME. Type of coupling circuit used in radar receivers to permit discrimination against echo pulses of duration longer than the transmitted pulse.

PHASE. Phase constant is the imaginary component of the propagation constant.

PROPAGATION. 1. Propagation constant per unit length of a uniform line is the natural logarithm of the ratio of the current at a point of the line to the current at a second point, at unit distance from the first point along the line in the direction of transmission, when the line is infinite in length, or is terminated in its characteristic impedance.

2. Propagation constant per section of a periodic line is the natural logarithm of the ratio of the current entering a section to the current leaving the same section, when the periodic line is infinite in length, or is terminated in its iterative impedances.

3. Propagation constant of an electric transducer is the natural logarithm of the ratio of the current entering the transducer to the current leaving the transducer, when the transducer is terminated in its iterative impedances.

CONSTANT AMPLITUDE.

Recordings wherein all frequencies of the same intensity are inscribed at the same amplitude.

CONSTANT AMPLITUDE RECORDING.

Mechanical recording characteristic wherein, for a fixed amplitude of a sinusoidal signal, the resulting recorded amplitude is independent of frequency.

CONSTANT-CURRENT MODULATION.

Method of amplitude modulation in which a constant-current source supplies a radio-frequency generator and a modulation amplifier in paral-

lel, the variations in the current taken by the latter causing equal and opposite variations in the former, resulting in corresponding modulation of the carrier output.

CONSTANT-K NETWORK.

Ladder network whose product of series and shunt impedances is independent of frequency within the range of interest.

CONSTANT LUMINANCE TRANSMISSION.

Method of color television transmission in which the carrier color signal controls the chromaticity of the produced image without affecting the luminance.

CONSTANT VELOCITY.

Recordings wherein frequencies of a given intensity are inscribed with the same maximum velocity of the cutting stylus.

CONSTANT VELOCITY RECORDING.

Mechanical recording characteristic wherein, for a fixed amplitude of a sinusoidal signal, the resulting recorded amplitude is inversely proportional to the frequency.

CONSTRUCTOR, CABLE SHEATH.

Tool for creasing rings in cable sheaths when making gas-tight plugs.

CONSTRUCTION.

1. Process, art, or manner of constructing; act of devising and forming; also a thing constructed; structure.

2. Act or result of construing, interpreting, or explaining a declaration of fact; interpretation.

CONSTRUCTION CENTER.

Installation, located near or in a command-post area, where trunks and local circuits converge for entrance to the telephone central.

CONSTRUCTION CHIEF.

Noncommissioned officer in charge of the installation and maintenance of the trunk and long local circuits in the wire system of his unit.

CONSUL.

Official appointed by the government to reside in a foreign country, to care for the commercial interests of the citizens of the United States.

CONT (CONSTANT).

1. Anything invariable or not subject to change.
2. In mathematics, a magnitude that is supposed not to change its value in a certain discussion or stage of investigation.

CONTACT.

Part of an equipment, usually an alloy, sometimes of silver and platinum, designed to touch a similar contact to permit current to flow, or designed to break this union to cause a current to cease.

BACK. Relay, key, jack, or other contact designed to close a circuit and permit a current to flow when, in the case of a relay, the armature has released or fallen back.

FRONT. Contact on a movable member which closes a circuit when the associated device is operated.

MARKING. Contact of a telegraph relay which is closed when marking current is controlling the relay operation.

NORMAL. Contact which closes a circuit, permitting current to flow, when in its normal position.

RADAR. Aircraft is said to be in radar contact when its radar echo can be seen on the PPI tube and is properly identified.

SPACING. Contact of a telegraph relay which is closed when a spacing impulse is controlling the relay operation.

WET. Contact through which direct current flows.

CONTACT BANK ASSEMBLY.

Group of two or three banks with each bank containing 100 or 200 individually insulated brass contacts.

CONTACT MICROPHONE.

Microphone designed to pick up mechanical vibrations directly from the sound source and convert them into corresponding electrical currents or voltages.

CONTACT RECTIFIER.

Rectifier consisting of two materials in contact, in which rectification is due to greater conductivity across the contact in one direction than in the other.

CONTACT REPORT.

Report of the enemy made by a field unit, ship, or aircraft which is in visual, radio, SONAR, or radar contact with the enemy. The report, giving the information immediately available when the contact is first made, is known as an initial contact report. Subsequent reports containing additional information are referred to as amplifying reports. (Reference: SIGHTING.)

CONTACT-SPRING FILE-UP.

Number of springs arranged one above the other.

CONTACTOR.

1. Device for closing and opening electrical circuits remotely.
2. Heavy duty relay which controls electrical circuits.
3. Device acted on by changes in gas pressures to open or close a signal circuit.

CONTACTOR ALARM.

Signal calling attention to lowered pressure in a cable gas pressure system.

CONTAMINATING MATERIAL.

Denaturing material used in making uranium 235 or plutonium.

CONTAMINATION.

1. Deposition of cathode emitting material on grid of tube, causing unwanted grid emission.
2. Exposure to radioactive radiation.
3. Condition existing in a given area due to the presence of unwanted radioactive or toxic material.

CONTIGUOUS RANGE GATES.

Classified definition. (Reference: AFM 100-50.)

CONTINENTAL AIR COMMAND.

One of the major air commands in the US, the

headquarters of which is located at Mitchel AFB, New York.

CONTINENTAL CODE.

International Morse Code, universally used for radiotelegraphy.

CONTINUOUS CURRENT.

Another term for direct current.

CONTINUOUS RECORDER.

Recorder whose record sheet is a continuous strip or web rather than individual sheets.

CONTINUOUS SPECTRUM.

Spectrum which exhibits no structure and appears to represent a continuous variation of wavelength from one to the other.

CONTINUOUS WAVES.

Successive oscillations of waves, identical under steady-state conditions. Generally, radio waves are of a constant amplitude and constant frequency.

CONTINUOUS-WAVE RADAR.

System in which a transmitter sends out a continuous flow of radio energy to the target which reradiates (scatters) the energy intercepted and returns a small fraction to a receiving antenna.

CONTINUITY.

The presence of a complete path through which current can flow.

CONTINUITY TEST.

Electrical test to determine the existence of a broken connection.

CONTOUR GRINDING.

Process of hand lapping an oscillator crystal plate to provide convex surfaces.

CONTOUR VIBRATION.

Shear mode of vibration.

CONTRACT.

1. Term used in air defense operations.
2. Method by which the scale of a situation display is decreased from normal setting.

CONTRACT TECHNICAL SERVICES.

Services to provide indoctrination of Air Force

personnel during the introduction of complex equipment into Air Force units.

CONTRACT TECHNICIAN.

Employee, paid by the Air Force, representing a commercial concern under contract with the concern. A contract technician provides technical service on specified complex equipment or systems and is particularly qualified in the maintenance and operation of such equipment.

CONTRAST.

1. Actual difference in density between the highlights and the shadows. Contrast is not concerned with the magnitude of density but only with the difference in densities.

2. Amplitude ratio between picture white and picture black.

CONTROL.

1. Parts of a digital computer which effect the carrying out of instructions in proper sequence, the interpretation of each instruction, and the application of the proper signals to the arithmetic unit and other parts in accordance with this interpretation.

2. One or more of the components in any mechanism responsible for interpreting and carrying out manually-initiated directions. Sometimes called manual control.

AUTOMATIC BRIGHTNESS. Circuit used in television receivers to keep the average brightness of the reproduced image essentially constant. Its action is like that of an automatic volume control circuit.

CIRCUIT. Authority assigned to a specific office on a toll circuit to direct overall service continuity operations.

CRYSTAL. Control of the frequency of an oscillator by means of a specially designed and cut crystal.

DIFFERENTIAL GAIN. Device for altering the gain of a radio receiver at appropriate times so as to equalize the amplitude of multiple signals at the output of the receiver.

EN ROUTE RADAR. Portion of the long-range radar operation as applies to the positive fixing and/or control of aircraft operating between two terminal areas.

FREQUENCY. Regulation of the frequency of a generating system.

LANDING RADAR. Precision radar system of radar approach control engaged only in landing operations.

LOCAL. System or method of radio-transmitter control whereby the control functions are performed directly at the transmitter.

PRIMARY. Local agency, control tower, surveillance radar, or other, who will exercise control over an aircraft within the airport control area prior to assumption of control of the aircraft by precision approach control.

RADAR APPROACH. Combination of a surveillance and precision radar system engaged in the complete radar control of aircraft operating within a designated airport control zone.

RADIO. Control of mechanism or other apparatus by radio waves.

REMOTE. System or method of radio-transmitter control whereby the control functions are performed from a distance, electrically, over intervening wire or radio circuits.

SENSITIVITY TIME. Circuit which acts to vary the amplification of a radio receiver in a predetermined manner as a function of time, in order to adjust or compress signals which may be received.

TERMINAL AREA RADAR. Combination of a high resolution surveillance radar and precision radar system engaged in the complete radar control of aircraft operating within a designated terminal control area and/or control zone.

CONTROL AND REPORTING CENTER.

Operational center immediately subordinate to an air control center responsible in a certain area

for control and reporting of aircraft and certain warning services.

CONTROL AND REPORTING POST.

Radar installation capable of providing medium high altitude long range radar cover. Low cover to be consistent with line of sight ranges and siting restrictions. A control and reporting post must be capable of performing the following functions:

- a. Tactical control of fighter aircraft as directed by the air control center or the control and reporting center.
- b. Radar surveillance and raid reporting.
- c. Operational supervision of associated reporting posts.
- d. Providing assistance to fighters on ground support missions (tactical only).
- e. Filtering.

CONTROL CHARACTERISTIC.

Relation between critical grid voltage and anode voltage.

CONTROL CHART.

Plotted graph showing performance or quality along the vertical scale, against time along the horizontal scale. It contains two horizontal lines called control limits, and usually a central line called median.

CONTROL ELECTRODE.

Electrode on which a voltage is impressed to vary the current flowing between two or more other electrodes.

CONTROL GRID.

Grid electrode, ordinarily placed between the cathode and anode of an electron tube, for use as a control electrode.

CONTROL GRID BIAS.

Average dc voltage between the control grid and cathode of a vacuum tube.

CONTROL GRID PLATE TRANSCONDUCTANCE.

Ratio of the amplification factor of a vacuum tube to its plate resistance, combining the effects of both into one term.

CONTROL LIMITS.

Two parallel horizontal lines drawn directly on the control chart. One is the upper control limit, and the other is the lower control limit. Plots which fall between the two limits are usually considered normal or cause-free plots.

CONTROL OF ELECTROMAGNETIC RADIATIONS.

Plan for controlling electromagnetic radiations during times of emergency, as directed by Executive Order 10312, 10 December 1951. The purpose is to deny the enemy aircraft the use of electromagnetic radiations for navigation, while still providing essential services. With reference to commercial broadcast stations, procedures might include sequential transmission of the same program material on one frequency by several stations in the same general area. Another procedure is to have all stations in a general area broadcast the same program material simultaneously on the same frequency. This would prevent an aircraft from taking a bearing on any one station. The two assigned frequencies for CONELRAD operations by commercial broadcast stations are 640 KC and 1240 KC. The authority for promulgating the CONELRAD plans under Executive Order 10312 has been delegated to the Federal Communications Commission in the case of non-government radio services, and to the responsible operating agency in the case of government radio services. A Department of Defense CONELRAD plan and detailed implementing plans have been prepared.

CONTROL PANEL.

Used to mount and protect electrical equipment.

CONTROL TOWER.

1. Facility at an airfield, usually a tower with its special equipment, for controlling the movement of airdrome traffic and for controlling ground vehicles in the takeoff and landing area.

2. Personnel operating the tower.

CONTROL TRANSFER POINT.

Point in the airspace, usually defined by a radio navigational aid, at which the control of an aircraft is transferred from one air traffic control

facility to another, or from one controller within a facility to another within the same facility.

CONTROL TRANSFORMER.

Synchro in which the electrical output of the rotor is dependent on both the shaft position and the electrical input to the stator. (Reference: SYNCHRO CONTROL TRANSFORMER.)

CONTROL WINDING.

Winding by means of which a controlling magnetomotive force is applied to a core.

CONTROL ZONE.

Airspace of defined dimensions, designated by competent authority, extending upwards from the surface, including one or more airports, and within which, rules additional to those governing flight in control areas apply for the protection of air traffic.

CONTROLLED AIRSPACE.

Airspace is defined as the dimensions within which air traffic control service is provided to IFR flights.

CONTROLLED CARRIER.

System of modulation wherein the carrier is amplitude modulated by the signal frequencies, and, in addition, the carrier is amplitude modulated in accordance with the envelope of the signal, so that the modulation factor remains constant regardless of the amplitude of the signal.

CONTROLLED DEVICES COUNTERMEASURE.

Controlled electronic countermeasure against guided missiles, pilotless aircraft, proximity fuzes, or similar devices.

CONTROLLED INTERCEPT.

Intercept wherein the friendly aircraft are controlled from a ground or ship station.

CONTROLLED INTERCEPTION.

Interception during which friendly airborne objects are vectored by directions from an airborne or surface station.

CONTROLLED MAP.

Precise scale map with horizontal and vertical ground control as a basis.

CONTROLLER.

1. Ship or ground personnel charged with the responsibility of controlling aircraft in an air defense area.

2. Air Force officer qualified as an intercept controller and assigned to duty at a NORAD division.

FEEDER. Surveillance radar controller responsible for funneling aircraft into a runway radar control pattern.

FIGHTER. Officer on the staff of a tactical air controller, charged with coordination and evaluation of air warning reports and operational control of aircraft allocated to him.

FINAL. Radar air traffic control systems, the precision radar controller responsible for the information and control procedures required to complete the actual landing. During PPI assists, this responsibility becomes the function of the PPI operator engaged in the operation.

FORWARD AIR. Officer in charge of a tactical air control party.

PICK-UP. Surveillance radar controller who first contacts and identifies new arrivals and advises them of current airport operations in use.

RADAR. Air traffic controller or other responsible person proficient in the use and interpretation of radar and capable of performing one or more of the following functions:

- a. Surveillance controller.
- b. Traffic director.
- c. Final controller.

SENIOR. Officer who is responsible for the operation of an air defense control center, and for the conduct of air defense operations.

SURVEILLANCE. Radar controller proficient in the use and interpretation of search and/or height finding radar equipment and trained in the dissemination of the information so

gained so as to assist in the expeditious flows of air traffic, aircraft separation, position reports and emergency situation.

TACTICAL AIR. Officer in charge of all operations of the tactical air control center. He is responsible to the tactical air commander for the control of all aircraft and air warning facilities within his area of responsibility.

CONTROLLER CIRCUIT.

Circuit established for the purpose of passing air-defense information from the controller of one installation to the controller of another installation.

CONNECTOR.

Switching mechanism for connecting a trunk line to a subscriber line, etc. It may be designed to hunt for an idle terminal.

ConUS. (CONTINENTAL UNITED STATES).**CONVECTION.**

Circulation in a fluid of nonuniform temperature, due to differences of density.

CONVECTION CURRENT.

Current in which electricity is carried by moving masses heavier than electrons.

CONVENIENCE RECEPTACLE.

Contact device installed at an outlet for the connection of a portable lamp or appliance by means of a plug and flexible cord.

CONVENTION.

Symbol which may represent anything selected as long as it is agreed on.

CONVERGE.

Direct so that two lines of sight meet at a common focal point and form an angle from the point.

CONVERGENCE.

Meeting and crossover of three electron beams in a color picture tube at a common point on shadow mask. Color television term.

CONVERGENCE CONTROL.

Variable resistor in high-voltage section controls voltage applied to three-gun picture tube. Color television term.

CONVERGENT BEAM.

Beam of light rays that meet (converge) at a point.

CONVERGING CONVERGENT, CONVEX, OR COLLECTIVE LENS.

Lens that will converge parallel light. It is always thicker at the center than at the edge. (Reference: POSITIVE LENS.)

CONVERSION GAIN.

1. Ratio of the IF output voltage to the input signal voltage of the first detector of a superheterodyne receiver.
2. Ratio of the available IF power output of a converter or mixer to the available RF power input.

CONVERSION TRANSCONDUCTANCE.

1. Characteristic associated with the mixer function of vacuum tubes, and used in the same manner as mutual conductance. It is the ratio of the IF current in the primary of the first IF transformer to the RF signal voltage producing it.
2. Transducer in which the signal undergoes frequency conversion. The gain or loss of a conversion transducer is specified in terms of the useful signal.
3. Quotient of the magnitude of the desired output-frequency component of current by the magnitude of the input-frequency component of voltage when the impedance of the output external termination is negligible for all of the frequencies which may affect the result.

Note: Unless otherwise stated, the term refers to the cases in which the input-frequency voltage is of infinitesimal magnitude. All direct electrode voltages and the magnitude of the local-oscillator voltage must be specified, fixed values.

CONVERSION VOLTAGE GAIN.

Ratio of the magnitude of the output-frequency voltage across the output termination, with the transducer inserted between the input-frequency generator and the output termination, to the magnitude of the input-frequency voltage across the input termination of the transducer.

CONVERTER.

1. Section of a superheterodyne radio receiver which converts the desired incoming RF signal to a lower carrier frequency known as the intermediate frequency.
2. Rotating machine consisting of an electric motor driving an electric generator for the purpose of changing alternating current to direct current.
3. Facsimile device that changes the type of modulation delivered by the scanner.
4. Facsimile device which changes amplitude modulation to audio frequency shift modulation. Generally called a remodulator.
5. Device which changes audio frequency shift modulation to amplitude modulation. Generally called a discriminator.
6. Conversion transducer in which the output frequency is the sum or difference of the input frequency and an integral multiple of the local oscillator frequency.

Note. The frequency and voltage or power of the local oscillator are parameters of the conversion transducer. Ordinarily, the output signal amplitude is a linear function of the input signal amplitude over its useful operating range.

ARC. Form of oscillator utilizing an electric arc as the generator of alternating or pulsating current.

LINE BALANCE. Device used at the end of a coaxial line to isolate the outer conductor from ground. (Reference: BAZOOKA.)

OMNI-BEARING. Electro-mechanical device which combines an omni-range signal with aircraft heading information to furnish electrical signals for the operation of the pointer of a radio magnetic indicator. An omni-bearing converter becomes an omni-bearing indicator when a pointer and dial are added.

TWENTY-CYCLE. Source of 20-cycle ringing current obtained from a dc battery by means

of a tuned pole change and transformer circuit.

CONVERTER TUBE.

Multielement vacuum tube used both as a mixer and an oscillator in a superheterodyne receiver. It creates a local frequency and combines it with an incoming signal to produce an intermediate frequency.

CONVERTER UNIT.

Unit of a radar system in which is located the mixer and usually two stages of IF amplification. Usually placed relatively close to the radar antenna. It performs a preamplifying operation.

CONVEX.

Rounded and bulging outwardly as the outer surface of a sphere.

CONVEX LENS.

Lens curved outward on one side and flat on the other. (Reference: CONVERGING LENS.)

CONVEX-CONCAVE LENS.

Lens with one convex and one concave surface.

CONVOTROL.

Type of dry-disc rectifier.

COOLING WATER.

Fluid which circulates through the jacket space of cylinders and cylinder heads to prevent excessive heating of the castings.

COOPER-HEWITT LAMP.

Mercury-vapor lamp that produces a bluish-green light having a high ultra-violet content.

COORDINATE CONVERSION.

System of transferring a polar-grid presentation to a rectangular-grid presentation.

COORDINATE SYSTEM.

Group of quantities which, when taken together, serve to define the position of a point in two or three dimensional space.

COORDINATED TRANSPOSITIONS.

Transpositions which are installed in either electric supply or communication circuits or in both for the purpose of reducing inductive coupling and which are located effectively with respect to

the discontinuities in both the electric supply and communication circuits.

COORDINATE, COORDINATION, COORDINATOR.

1. Geographically, any one of two or more magnitudes that determine position.

2. To carry out coordination with a person or department.

3. Coordination; the act of informing a department or person of a course of action so that he can either fit his own actions into the proposed course of action, or take steps to modify the proposed course of action to make it fit his own.

4. Coordinator; one who coordinates.

COPPER-CLAD WIRE.

Steel wire lightly coated with copper.

COPPER-OXIDE RECTIFIER.

Copper disks coated on one side with cupreous oxide.

COPY.

1. Maintain a continuous receiver watch and a complete log.

2. Material in graphic form which is to be transmitted for facsimile reproduction by the recorder. Also referred to as subject or subject copy.

COPYING TELEGRAPHY.

Obsolete term used to designate a facsimile system for transmitting only black and white copy.

COR (COMBAT OPERATIONS REPORT).**COR (CORPS).**

Army tactical unit usually made up of two or more divisions such as the Corps of Engineers.

CORD (COORDINATE, COORDINATION, COORDINATOR).

1. Geographically, any one of two or more magnitudes that determine position.

2. To carry out coordination with a person or department.

3. Coordination; the act of informing a department or person of a course of action so that he

can either fit his own actions into the proposed course of action, or take steps to modify the proposed course of action to make it fit his own.

4. Coordinator; one who coordinates.

CORD.

Flexible conductor, or several conductors under one cover, equipped with terminals.

ANSWERING. Cord nearest the face of the switchboard which is used for answering subscriber's calls and incoming trunks.

BACK. Switchboard cord of a pair nearest the jackfield.

CALLING. Cord farthest from the face of the switchboard which is used for completing an incoming call to the called subscriber or to an outgoing trunk. It may be arranged to transmit dial pulses to the called line.

COMMON BATTERY. Cord circuit used in common battery office. It may be of either the repeating coil or impedance coil bridge type.

DIAL. Separate cord used to transmit dial pulses to the called lines.

FRONT. Switchboard cord of a pair nearest the operator.

IMPEDANCE BRIDGE. Method of connecting the common office battery to the cord circuits by connecting the battery to the mid-points of a retardation coil bridged across the cord circuit.

REPEATING COIL BRIDGE. Method of connecting the common office battery to the cord circuits by connecting the battery to the mid-points of a repeating coil, bridged across the cord circuit.

PATCH. Cord equipped with one or more conductor plugs at each end for interconnecting jack-terminated equipment.

SWITCHBOARD. Plug-ended cords, usually in pairs, for completing telephone connections.

TEST. 1. Cord used for testing.
2. Cord end at a frame of a trunk to a testing position.

THRU SWITCHING. Cord circuit by which incoming and outgoing interoffice trunks may be connected for thru traffic not terminating at the switchboard.

UNIVERSAL. Cord circuit arranged to give supervision over either common battery or magneto (ringdown) line to which the cord circuit may be connected.

CORD CIRCUIT.

Connecting circuit terminating in a plug at one or both ends and used at switchboard positions in establishing telephone connections.

CORDLESS SWITCHBOARD.

Manual telephone switchboard which uses manually operated keys to make connections.

CORE.

1. Magnetic material placed within a coil to increase the intensity of the magnetic field.
2. Magnetic material inside a relay or inductor coil winding.
3. Conductors of a cable inside a sheath.
4. Central forming ring about which a roll of rope is wound.

CORE HITCH.

Attachment to a cable core to permit pulling it into a duct without damaging the sheath.

CORE MEMORY.

High-speed electromagnetic storage device within a computer.

CORNER.

1. Abrupt change in the direction of the axis of a waveguide.
2. Point at which a line changes direction, requiring special construction.

CORNER CUBE REFLECTOR.

Device attached to a small balloon.

CORNER REFLECTOR.

1. Device made in the form of three planes, mutually perpendicular; as the three sides of a cube that meet at a corner. It is very effective in returning a strong radar echo.

2. Device consisting of two flat surfaces at right angles to each other. It is used with dipole antennas to add directivity to the radiation pattern.

CORNER-REFLECTOR ANTENNA.

Antenna consisting of a primary radiating element and dihedral corner reflector.

CORONA.

Luminous discharge due to ionization of the air surrounding a conductor around which exists a voltage gradient exceeding a certain critical value.

CORPORAL.

Tactical, surface-to-surface guided missile developed for the Army. It is rocket powered and has a speed of Mach 3, a ceiling of 260,000 feet, and a range of 150 miles. The nomenclature is XSSM-A-17. The missile is 40 feet long, 25 feet in diameter, and weights 12,000 pounds. Guidance is by the beam-rider technique, with ballistic trajectory after motor cut-off. Either conventional or atomic warheads may be employed.

CORPS.

Army tactical unit usually made up of two or more divisions such as the Corps of Engineers.

CORPUSCULAR THEORY.

Theory that the sensation of light was due to bombardment of the retina of the eye by tiny particles given off by a luminous body.

CORRECTED LENS.

Compound lens, the various surfaces of which have been so designed with respect to each other than the lens are reasonably free from one or more aberrations.

CORRECTED RADIO BEARING.

Observed radio bearing to which all known corrections have been applied.

CORRECTION.

1. Difference in mathematics, between the true value and a calculated or observed value in the computer field. A quantity (equal in absolute magnitude to the error) added to a calculated or observed value to obtain the true value is called a correction.

2. Computer or data-processing system, incorrect step, process, or result. In addition to the mathematical usage in the computer field, the term is also commonly used to refer to machine malfunctions as machine errors and to human mistakes as human errors.

CORRECTION WEDGE.

Range finder or height finder, rotating a wedge-shaped element, used precisely to divert the line of sight to correct errors in the optical system caused by temperature variations.

CORRECTION WINDOWS.

Optical wedges of very small angles. They admit light, seal out dirt and moisture, and are so mounted that they may be rotated to compensate for the accumulated errors in the entire system.

CORRECTIVE OR SHAPING NETWORK.

Electrical network designed to be inserted in a circuit to improve its transmission properties, its impedance properties, or both.

CORRELATED RADAR DATA.

Radar data which a computer associates with tentative or established tracks.

CORRELATING LATERAL TOLD-INC.

Track status associated with surveillance information from an adjacent semiautomatic organization which can be correlated with radar data at the receiving organization.

CORRELATION.

Process of associating related items with each other.

CORRELATION DISTANCE.

Term used in tropospheric scatter propagation. It is the minimum spatial separation between antennas which will give rise to independent fading of the received signals.

CORRODE.

Western Electric test project which supplies the required data for the design of equipment and subsequent installation of the distant early-warning time.

CORROSION PROOF CABLE.

Cable with a special protective cover over the sheath to reduce damage from electrolysis.

CORT (ESCORT).

1. Airplane or airplanes flying, or assigned to fly, as protection to other aircraft.
2. Action of such flying, or the protection given by it.
3. To accompany other aircraft or vessels as protection.

COSECANT-SQUARED ANTENNA.

Shaped-beam antenna in which the radiation intensity over a part of its pattern in some specified plane (usually the vertical) is proportional to the square of the cosecant of the angle measured from a specified direction in that plane (usually the horizontal). Its purpose is to lay down a uniform field along a line which is parallel to the specified direction, but which does not pass through the antenna.

COSECANT SQUARED BEAM.

Radar beam pattern designed to give approximately uniform signal intensity for echoes received from distant and nearby objects.

COSMIC.

Security warning used as a designator for certain types of information within the North Atlantic Treaty Organization. The word cosmic is unclassified, but the related meaning of the word is confidential.

COSMIC NOISE.

Radio static, the origin of which is due to sources outside the earth's atmosphere. The source may be similar to sunspots, or spots on other stars.

COSMIC RAYS.

Extremely fast particles which continually enter the earth's upper atmosphere from interstellar space.

COSMOLOGY.

Scientific study of the universe.

COSMONAUTICS.

Word coined in recent years to describe the science, as yet merely academic, of travel beyond the solar system by using radically new form of propulsion.

COST PLUS FIXED FEE CONTRACT.

Contract in which the government agrees to reimburse the contractor for costs incurred in producing the articles or performing the services covered by the contract, and to pay a fixed fee in addition.

COTAR (CORRELATED ORIENTATION TRACKING AND RANGE SYSTEM) (RADAR).

COULOMB.

Measure of the quantity of electricity that passes a given point in a circuit in a given time. One coulomb is equal to a current of one ampere flowing for one second.

COULOMB METER OR COULOMETER.

Instrument for measuring a quantity of electricity by the amount of electro-deposition produced from an electrolyte.

COULOMB'S LAW.

Law of electrostatic attraction.

COUNT.

Numerical sequence of pairs from a cable as terminated in a central office.

USAGE. Count indicating the number of times a circuit or piece of equipment is used during a certain period.

COUNT-DOWN.

Ratio, expressed as a percentage, of the difference between the number of synchronized replies received by an aircraft and the number of its interrogations.

COUNTDOWN.

Series of events that take place from the start of rocket-launching operations until the rocket lifts off the launch stand. Countdown starts with a missile in the ready condition, progresses through loading of propellants and pressurization gas, activating the circuits, last-minute check-out of components, starting the rocket engines, and building up the thrust to the required force for lift-off.

COUNTER.

1. Device capable of changing from one to the next of a sequence of distinguishable states upon each receipt of an input signal.

2. Circuit which counts input pulses. One specific type is a circuit which produces one output pulse each time it receives some predetermined number of input pulses. The same term may also be applied to several such circuits connected in cascade to provide digital counting.

RING. Loop of interconnected bi-stable elements such that only one is in a specified state at any given time and such that, as input signals are counted, the position of the one specified state moves in an ordered sequence around the loop.

COUNTER CIRCUIT.

Circuit which receives uniform pulses representing units to be counted and produces a voltage in proportion to their frequency.

COUNTER-COUNTERMEASURES.

Employment of antijamming techniques and circuits designed to decrease the effects of electronic countermeasure activities against electronic equipment.

COUNTER-EMF (ELECTROMOTIVE FORCE) CELL.

Cell using nickel and sodium hydroxide to oppose the voltage of the central office battery.

COUNTER-INTELLIGENCE CORPS.

Organization responsible for activities to prevent enemy intelligence from accomplishing its mission.

COUNTERMEASURES

1. Military science which, by the employment of devices and/or techniques, has as its objective the impairment of the operational effectiveness of enemy activity.

2. Antiradar devices, usually aluminum foil called windows or chaff, and electronic detectors and jammers.

COUNTERMEASURES OF OPPORTUNITY.

Electronic countermeasure techniques which may be made ineffective by changes in operational procedures and tactics, or by minor equipment changes.

COUNTERPOISE.

System of wires used in conjunction with an

antenna. The wires are placed a short distance above the ground and are insulated from it. They serve as an earth ground by virtue of their capacity to ground and are used when actual ground connections are not practicable.

COUNTING CIRCUIT.

Circuit which receives uniform pulses representing units to be counted and produces a voltage in proportion to their frequency.

COUNTING DOWN CIRCUIT.

Frequency divider.

COUPLED IMPEDANCE.

Effect produced in the primary winding of a transformer by the influence of the current flowing in the secondary winding.

COUPLER.

Arrangement of inductance coils or capacitors so placed with reference to each other that there is electromagnetic or electrostatic coupling between their circuits.

COUPLING.

Association of two circuits so that electrical energy may be transferred from one to another.

CAPACITIVE. Type of interconnection between stages of an amplifier which employs a capacitor in the circuit between the plate of one tube and the grid of the succeeding one.

CRITICAL. Degree of coupling between two circuits independently resonant to the same frequency which results in optimum transfer of energy at the resonant frequency.

CROSS. Unwanted coupling between two different communication channels or their component parts.

CROSSTALK. Ratio of the power in the disturbing circuit to the induced power in the disturbed circuit, observed at definite points of the circuits and under specified terminal conditions.

DIRECT. Association of two or more circuits by means of a self-inductance, capacitance, resistance or a combination of these which is common to the circuits.

IMPEDANCE. Use of a tuned circuit or an impedance coil as the coupling element between two circuits.

INDUCTIVE. 1. Association of two or more circuits with one another by means of inductance mutual to the circuits.

2. Interrelation of neighboring electric supply and communication circuits by electric or magnetic induction or both.

LOOSE. 1. Degree of coupling less than the critical coupling.

2. Less than optimum coupling. Coupling providing little transfer of energy.

MUTUAL-INDUCTANCE. Coupling of two circuits by means of their mutual inductance.

RC (RESISTIVE-CAPACITIVE). Coupling between two or more circuits, usually amplifier stages, by means of a combination of resistive and capacitive elements.

RESISTANCE. 1. Method of interconnection between stages in an amplifier which connects the plate of one tube to the grid of the following tube by means of a resistor.

2. Method of transferring energy from one circuit to another by means of resistance common to both circuits.

TIGHT. More than enough coupling to give maximum transfer of energy at the resonant frequency. Greater than optimum coupling.

TRANSFORMER. Coupling of circuits by means of a transformer.

COUPLING CAPACITOR.

Capacitor used to couple two circuits together. Coupling is accomplished by means of capacitive reactance common to both circuits.

COUPLING COEFFICIENT.

Measure of the degree of coupling that exists between two circuits. It is equal to the ratio of the mutual impedance to the square root of the product of the total self-impedances of the coupled circuits, all impedances being of the same kind.

COUPLING ELEMENT.

Means by which energy is transferred from one circuit to another, the common impedance necessary for coupling.

COUPLING TRANSFORMER.

Transformer used to couple two circuits by means of its mutual inductance.

COURSE.

Projected path of an object, usually expressed in terms of true bearing.

COURSE ERROR.

Angular difference between the intended course and the course made good.

COURSE LIGHT.

Light directed along the course of an airway so as to be chiefly visible from points on or near that airway.

COURSE LINE.

Line which is the projection in the horizontal plane of the proposed path of travel, composed of the course and element of distance.

COURSE LINE COMPUTER.

Airborne equipment which accepts bearing information from a VHF omnidirectional range receiver and distance information from a distance-measuring equipment interrogator and processes it to provide deviation information and distance-to-go information with respect to a pilot-selected way point within the coverage of the VHF omnidirectional range and distance-measuring equipment ground station. Course line computers supply the navigation indications to instruments mounted on the instrument panel of the aircraft.

COURSE LINE DEVIATION.

Difference between the track and the course line, expressed in terms of either angular or linear measurement.

COURSE LINE DEVIATION INDICATOR.

Cross-pointer instrument which indicates deviation from a course line.

COURSE LINE SELECTOR.

Instrument which provides means to select the course to be flown.

COURSE MADE GOOD.

Resultant direction of actual travel projected in the horizontal plane, expressed as an angle from the reference line to a line extending in the direction of actual travel, and usually measured clockwise from the reference line. This is the equivalent of the bearing of the aircraft from the point of departure.

COURTESY LIGHT.

Auxiliary position light.

COVER.

1. Maintain a continuous receiver watch with transmitter calibrated and available but not necessarily available for immediate use.

2. Classified Definition. (Reference: AFM 100-50.)

COZI (COMMUNICATIONS ZONE INDICATOR).

Device developed by Raytheon to indicate whether or not long distance high frequency broadcasts are successfully reaching their destinations. The equipment will also indicate approximately how strong the signals are when they arrive. It could be used by the Voice of America to check the effectiveness of their broadcasts, and also as an aid in increasing the efficiency and reliability of any long distance radio communications system. To test a signal, COZI sends out from the radio stations own antenna, a radar beam along the same path taken by the radio waves. The interruption in broadcasting is so brief the listeners do not notice the break. The radar beam returns and is measured for both its intensity and the time interval of its travel. From these measurements of back-scatter energy, the equipment produces values that tell the operator, with a high degree of accuracy, the skip distance of the wave and its probable strength when it arrives at its destination. Under certain conditions, it is also possible to detect various evidences of deliberate "jamming" through variances in the calculated energy of the back-scatter return.

CP (COMMAND POST).

Physical facility within a combat center or direction center from which division or sector supervision of air-defense operations is exercised.

CPFF (COST PLUS FIXED FEE CONTRACT).

Contract in which the government agrees to reimburse the contractor for costs incurred in producing the articles or performing the services covered by the contract, and to pay a fixed fee in addition.

CPS (CYCLES PER SECOND).

One complete sequence of variations in an alternating current, including a rise to a maximum in one direction, a return to zero, a rise to a maximum in the opposite direction, and a return to zero. The number of cycles occurring in one second is called frequency.

CR.

1. International Telecommunications Union designation for station open to limited public correspondence.

2. Abbreviation associated with specific keys on a teletypewriter such as CR, LF, LIRS, or FIGS, which, when operated cause the teletypewriter to perform mechanical functions in order that a message may be received in proper form.

CRAB.

Turning of an airplane which causes its longitudinal axis to vary from the track of the plane.

CRAB ANGLE.

Angle through which an aircraft is turned into the wind in an attempt to correct for drift. If this angle eliminates the drift and the aircraft thus makes good its desired course, then the crab angle is also the drift correction angle.

CRAFT.

Term usually applied to small ships, including all boats, launches, tankers, tugs, ships, and vessels under the jurisdiction and responsibility of the transportation corps.

CRANK.

Part of the crankshaft which is in the form of a crank and crankpin.

CRANKCASE.

Lower part of the engine structure surrounding the crankshaft working parts.

CRANKPIN.

Part of the crank to which the connection rod is connected.

CRANKSHAFT.

Part of the engine which transmits the reciprocating motion of the piston to the driven unit in the form of rotary motion. That part to which the connection rod and flywheel are attached. That part which actually does the delivering of the power developed above the piston.

CRANKSHAFT MAIN BEARING.

Part of the shaft which revolves in the bearing in the crankcase which is the main support of the crankshaft.

CRANKSHAFT PIN BEARING OR JOURNAL.

Part of the crankshaft on which the connecting rod is attached and rotates.

CRANKSHAFT WEB.

Part of the crankshaft that connects the crankpin with the main bearing of the crankshaft.

CRASH ALARM.

Relay circuit which functions to connect the telephones of all emergency services, such as fire department.

CRASH-FIRE SYSTEM.

Two-way radio-communications system consisting of a base station and one or more portable and/or mobile units, used for the prompt and efficient control of fire, crash, and crash-ambulance vehicles and personnel.

CRATER.

1. Cavity formed in the positive carbon electrode of an electric arc.
2. Depression at the termination of an arc weld.

CRATER LAMP.

1. Glow discharge type vacuum tube, whose brightness is proportional to the current passing through the tube. The glow discharge takes place in a cup or crater rather than on a plate as in a neon lamp.
2. Gaseous lamp, usually containing neon. Pro-

vides a point source of light that can be modulated with a signal.

CRC (CONTROL AND REPORTING CENTER).

Operational center immediately subordinate to an air control center responsible in a certain area for control and reporting of aircraft and certain warning services.

CREEP METAL.

Slow deformation which metals undergo when subjected to prolonged stress with or without exposure, simultaneously to high temperature, depending on the particular metal.

CREOSOTE.

Oil that is derived from distilling coal tar or wood tar. Used to preserve wood, particularly poles.

CREST FACTOR.

Ratio of the peak value to the effective (root-mean-square) value of an ac or pulsating wave.

CREST VALUE.

Crest value of any quantity which varies with time is the maximum value which the quantity attains during the time interval under consideration.

CRF (CARRIER FREQUENCY TELEPHONE REPEATER).

CRITERIA.

Standards.

CRITICAL ANGLE.

1. Maximum angle at which a radio wave may be emitted from an antenna, in respect to the plane of the earth, and still be returned to the earth by refraction in the ionosphere.
2. Angle at which radiation, about to pass from a medium of greater density into one of lesser density, is refracted along the surface of the denser medium.

CRITICAL AREA.

Portion of the subject copy which is seen by the facsimile scanner at any instant. (Reference: ELEMENTAL AREA.)

CRITICAL COUPLING.

Degree of coupling between two circuits independently resonant to the same frequency which results in maximum transfer of energy at the resonant frequency.

CRITICAL DAMPING.

Point of change between aperiodic and periodic damping.

CRITICAL DIMENSION.

Dimension of waveguide cross section which determines the cut-off frequency.

CRITICAL FREQUENCY.

1. Limiting frequency below which a wave component is reflected by, and above which it penetrates through, an ionospheric layer of vertical incidence.

2. Highest frequency which may be emitted from an antenna at 90 degrees (vertical incidence) and still be returned to the earth by refraction from one of the layers of the ionosphere.

CRITICAL GRID CURRENT.

Instantaneous value of grid current when the anode current starts to flow in a gas filled vacuum tube.

CRITICAL GRID VOLTAGE.

Instantaneous value of grid voltage when the anode current starts to flow in a gas filled vacuum tube.

CRITICAL HEIGHT.

Height above aerodrome elevation at which the instrument approach should be discontinued if visual reference is not established.

CRITICAL ITEM.

Essential item which is in short supply or expected to be short supply.

CRITICAL MATERIAL.

Raw or semiprocessed materials required for essential uses in a national emergency, which are not expected to be available in quantity, in quality, or in time, to meet requirements.

CRITICAL SIZE.

Minimum amount of material which will support a chain reaction.

CRITICAL STRAIN.

Point at which no recrystallization will take place on annealing, and above which abnormal grain growth occurs on annealing.

CRITICAL WAVELENGTH.

Wave length corresponding to the critical or threshold frequency in a quantum process brought about by radiation.

CRITICAL ZONE.

Area over which a bombing plane engaged in horizontal or glide bombing must maintain straight flight so that the bomb sight can be operated properly and bombs dropped accurately.

CRM (COUNTER-RADAR MEASURES).

Jamming signals and metalized foil called windows, chaff, rope, flak paper, and maiden's hair spread in the air to upset enemy radar.

CRO (CATHODE RAY OSCILLOSCOPE).

Cathode-ray tube used to show the waveform of a changing current or voltage.

CROSS.

Accidental contact between wires of different pairs.

CROSS ARM.

Horizontal member, usually of wood, attached to a pole or other vertical member, supporting lines, or cables.

CROSS ARM BRACE.

Steel strap mounted from pole to cross arm to hold the cross arm in position.

CROSS CONNECTIONS OR CROSSCUTS.

1. Easily changed or removed wire that is loosely run between equipment and circuit terminals.
2. Unwanted modulation produced by one carrier, altering, in some manner, another carrier.
3. Jumpers on a main frame.
4. Connections made at distributing frames and selectors, switch and relay bays using jumper wire for connecting the subscriber's line to the switching train and for distributing the various circuit paths in a graded multiple at the selector bays.

CROSS COUPLING.

Unwanted coupling between two different communication channels or their component parts.

CROSS MODULATION.

1. Cross modulation is unwanted modulation produced by one frequency altering, in some manner, another frequency. Cross modulation usually results from non-linear circuits or overloading of equipment and generally causes crosstalk, either intelligible or unintelligible.

2. Type of crosstalk in which the carrier frequency being received is interfered with by an adjacent carrier, so that the modulated signal of both are heard at the same time.

CROSS TRAIL.

Distance of the point of impact of a bomb downwind from the nearest point on the ground over which the aircraft passes.

CROSS-BANDING.

Use of combinations of interrogation and reply frequencies such that either one interrogation frequency is used with several reply frequencies or one reply frequency is used with several interrogation frequencies.

CROSS-COLOR.

Interference in receiver chrominance channel caused by crosstalk from monochrome signals. Color television term.

CROSS-CONNECTIONS, GRADED.

System of cross connecting the circuits between the local selector relay bays and the first selectors switching bays in order to distribute the traffic evenly over the first selectors.

CROSS-EYE.

Classified definition. (Reference: AFM 100-50.)

CROSS-LEVEL ANGLE.

Angle between the plane of the ship's deck and a horizontal plane, measured in the plan perpendicular to the side of the level angle lying in the ship's deck. This quantity is positive if the right side of the deck, as seen by an observer facing the target, is raised.

CROSS-NEUTRALIZATION.

Method of neutralization used in push-pull amplifiers whereby a portion of the plate-cathode ac

voltage of each vacuum tube is applied to the grid-cathode circuit of the other vacuum tube through a neutralizing capacitor.

CROSS-OVER FREQUENCY.

Frequency at which a recording process changes from a constant amplitude process (used for the low frequencies) to a constant velocity process (used for the high frequencies).

CROSS-OVER RANGE.

Classified definition. (Reference: AFM 100-50.)

CROSS-OVER SPIRAL.

Reference made to indicate the cross-over point when using 16-gauge 4-spiral (disc-insulated) toll-entrance cable.

CROSSBAR.

Switching system using mechanisms called crossbar switches, consisting of rectangular fields of contact springs operated in coordination by horizontal and vertical members.

CROSSBAR DIAL SYSTEM.

Dial operated telephone system using crossbar switches in the switching train and directly controlled by the dials in a straight forward decimal numbering system for making connections within its own network.

CROSSBAR EXCHANGE.

Exchange in which switching is done by crossbar apparatus.

CROSSBAR SWITCH.

Switch having a plurality of vertical paths, a plurality of horizontal paths, and electromagnetically operated mechanical means for interconnecting any one of the vertical paths with any one of the horizontal paths.

ARMATURE RESIDUAL. Metal clip of non-magnetic material fastened to an armature to prevent the armature from sticking to the core due to residual magnetism.

FINGER SPRING. Flexible U shaped spring which engages the select lever.

GUIDE FINGER. Metal tab welded to the select rod that supports the finger spring.

HOLD ARMATURE. Armature provided on each vertical that is pivoted between and supported by the front and rear rails of the switch. It is actuated by the hold magnet when it is desired to close a crosspoint in its associated vertical.

HOLD MAGNET. Coil and iron core, mounted on the rear of the switch.

HOLD PILOT SPRINGS. Stack of contact springs that are operated when the associated hold magnet is energized.

HORIZONTAL. Stack of flexible metal strips, insulated from each other, which run the full length of the switch. The horizontal strips are equipped with twin contact lever springs.

LADDER. Phenol-fiber member linking all the lever springs at any one crosspoint.

LADDER BACK REST. Adjustable bar associated with each vertical, located directly beneath the ladders. Used to hold the ladders in place and adjust the ladder to the required contact separation.

SELECT MAGNET. Coil and iron core, mounted on the end of the switch under each wing of the select magnet armature, which moves the armature in the desired direction.

SELECT MAGNET ARMATURE. Wing-shaped twin armature, mounted on one end of a select rod, which rotates the select rod a few degrees when one associated select magnet is energized.

SELECT MAGNET OFF NORMAL SPRINGS. Stack of contact springs associated with each select magnet that is actuated when the magnet is energized.

SELECT ROD. Metal rod located under the switch supported and pivoted on the select rod bearings.

VERTICAL. Stack of rigid stampings which run the full width of the switch from front to back. The vertical strips are each equipped with

ten or more sets of contacts multiplied together.

CROSSBAR SYSTEM.

Automatic telephone switching system which is generally characterized by the following features:

- a. Selecting mechanisms are crossbar switches.
- b. Common circuits select and test the switching paths and control the operation of the selecting mechanisms.
- c. Method of operations in which the switching information is received and stored by controlling mechanisms which determine the operations necessary in establishing a telephone connection.

CROSSFIRE.

Interference from one telegraph circuit to another circuit, or which causes the faulty operation of the relays in a telephone circuit.

CROSSING, RAILROAD.

Where the line crosses over a railroad in pole line construction. The crossing requires special clearance and strength.

CROSSTALK.

1. Unwanted sound reproduced by an electro-acoustic receiver associated with a given transmission channel resulting from cross coupling to another transmission channel carrying sound-controlled electric waves or, by extension, the electric waves in the disturbed channel which result in such sound.

2. Undesired power injected into a communication circuit from other communication circuits. May be intelligible or unintelligible.

3. Interference caused by energy being coupled from one circuit to another by stray electromagnetic, or electrostatic coupling.

4. Sound heard in a receiver associated with a given telephone channel resulting from telephone currents in another telephone channel.

Note. Crosstalk may be measured either by the loudness of the overhead sounds or by the magnitude of the coupling between the

disturbed and disturbing channels. In the latter case, to specify the loudness of the overhead sounds, the volume in the disturbing channel must also be given.

CROSSTALK COUPLING.

Ratio of the power in the disturbing circuit to the induced power in the disturbed circuit, observed at definite points of the circuits and under specified terminal conditions.

CROSSTALK UNIT.

Crosstalk measurement unit representing one millionth of zero decibel power value (10^{-6} db). toll-entrance cable.

CROSSTALK LEVEL.

Volume of crosstalk energy, measured in db, referred to a base.

CROWN.

Top of an engine piston.

CROWN GLASS.

One of the two principal types of optical glass.

CRP (CONTROL AND REPORTING POST).

CRPL (CENTRAL RADIO PROPAGATION LABORATORY).

Organization, reporting to the Department of Commerce through the Bureau of Standards, which is responsible for the collection, correlation, and analysis of data on which radio-propagation predictions are based, the issuance of radio-propagation predictions, and research on radio-propagation measurement methods and standards.

CRT (CATHODE-RAY TUBE).

Vacuum tube in which the instantaneous position of a sharply focused electron beam deflected by means of electrostatic and/or electro magnetic fields is indicated by a spot of light produced by the impact of the electrons on a fluorescent screen at one end of the tube.

CRU (CRUISER).

Man-of-war less heavily armed and armored than a battleship, having superior speed.

CRUTCH.

Auxiliary inputs to inertial bombing-navigation sub-systems.

crypta (CRYPTANALYSIS).

The process by which a cryptographic system is discovered by analysis cryptograms intercepted, or by analysis of the machine that sends the cryptograms.

crypta (CRYPTANALYST).

One trained in cryptanalysis.

crypta (CRYPTANALYTIC).

crypto (CRYPTOGRAPHER).

One who encrypts or decrypts messages, or has a part in making cryptographic systems.

crypto (CRYPTOGRAPHIC).

crypto (CRYPTOGRAPHY).

Art or science concerned with encrypting and decrypting.

CRYPTO-OPERATING INSTRUCTIONS.

Instructions describing the methods to be employed in the operation of a general cryptosystem. This includes a description of the general cryptosystem as well as the method of application of specific keys.

CRYPTOBOARD.

Personnel assigned to encrypting and decrypting messages.

CRYPTOCENTER.

Establishment maintained for the encrypting and decrypting of messages.

CRYPTOCHANNEL.

1. Complete system of cryptocommunication between two or more holders.
2. U.S. Navy flag ship, or station in a given cryptochannel which can communicate with any other flagship, or station in that cryptochannel just as any flagship, or station on a radio circuit can communicate with any other flagship, or station on that circuit.

CRYPTODATE.

Date which indicates the key employed.

CRYPTOGRAM.

Encrypted communication in visible writing.

CRYPTOGRAPHER.

One who encrypts or decrypts messages or has a part in making a cryptosystem.

CRYPTOGRAPHIC COMPROMISE.

Recovery of cryptographic information or plain text of messages by unauthorized persons through cryptoanalytic methods.

CRYPTOGRAPHIC MATERIAL.

Cryptographic equipment, instructions, and keying materials used in the encryption and decryption of classified communications.

CRYPTOGRAPHIC SYSTEM, HIGH GRADE.

Inherently resisting solution for a comparatively long period or indefinitely, thus providing lasting security.

CRYPTOGRAPHIC SYSTEM, LOW GRADE.

Provides temporary security.

CRYPTOGRAPHY.

Art or science which treats of the various means and methods for rendering plain text unintelligible and reconverting unintelligible text into intelligible language or the application thereof by means other than cryptanalysis.

CRYPTOLOGIC EQUIPMENT.

Cryptographic and special communications intercept equipment employed in Air Force communication and intelligence activities.

CRYPTONET.

Crypto-communication network.

CRYPTOPART.

One of several portions of a cryptotext. Each cryptopart bears a different message indicator.

CRYPTOSECURITY.

Component of communication security which results from the provision of technically sound cryptosystems and their proper use.

CRYPTOSECURITY OFFICER.

Officer appointed by the commander of a headquarters to represent the command in all matters relating to cryptosecurity and the physical security of cryptographic material.

CRYPTOSYSTEM.

Associated items of cryptomaterial which are used

as a unit and which provide a single means of encryption and decryption.

GENERAL. Basic method employing certain invariable elements to encrypt and decrypt.

SPECIFIC. Application of a specific set of rules and aids to a general cryptosystem.

CRYPTOTEXT.

Test of visible writing which conveys no intelligible meaning in any language or which apparently conveys an intelligible meaning that is not the real meaning.

CRYSTAL.

1. Natural substance, such as quartz or tourmaline, which is capable of producing a voltage when under pressure or stress, or producing pressure when under an applied voltage. It has the property of responding only to a given frequency when cut to a given thickness. It is therefore a valuable medium to control the frequency of radio transmitters.

2. Nonlinear element, such as galena or silicon, in which case the piezoelectric characteristic is not exhibited.

PIEZOELECTRIC. Piece of natural quartz or other material capable of demonstrating a piezoelectric effect. A quartz crystal can be ground to dimensions such that it will vibrate naturally at a desired radio frequency when placed in an electric circuit of appropriate components.

X-CUT. Crystal which is so cut that its major flat surfaces are perpendicular to an electrical (X) axis of the original quartz crystal.

XY-CUT. Crystal which is so cut that its characteristics are between those of the X-cut and the Y-cut crystals. It has a very low temperature coefficient.

Y-CUT. Crystal which is so cut that its major flat surfaces are perpendicular to a mechanical (Y) axis of the original quartz crystal.

CRYSTAL ANALYSIS.

Study of the arrangement of atoms, ions, or molecules in crystals, chiefly by X-ray methods aided by the theory of space groups.

CRYSTAL AXES.

Term used to refer to the imaginary reference line of direction used in cutting crystals. The three major axes are arbitrarily called the X, Y, and Z-axes.

CRYSTAL AXES.

Specific reference line of direction within a crystal.

CRYSTAL BURN-OUT.

Impairment of a crystal by exposure to excessive RF power.

CRYSTAL CALIBRATOR.

Crystal controlled oscillator used as a reference to check and set the frequency tuning of a receiver.

CRYSTAL CHECK.

1. Measurement of forward and backward crystal resistance.
2. Inspection of the piezoelectric quality of a crystal.

CRYSTAL CONTROL.

Control of the frequency of an oscillator by means of a specially designed and cut crystal.

CRYSTAL CONTROLLED TRANSMITTER.

Radio transmitter whose carrier frequency is directly controlled by a crystal oscillator.

CRYSTAL DETECTOR.

1. Mineral or crystalline material which allows electrical current to flow more easily in one direction than in the opposite, thus converting alternating current to pulsating current.
2. System composed of a metal wire and a crystal, which offers a higher resistance to currents in one direction than to currents in the other direction.

CRYSTAL FACE.

One of the surfaces of a cut crystal.

CRYSTAL DIODE.

Rectifying element comprising a semi-conducting crystal having two terminals designed for use in circuits in a manner analogous to that of vacuum-tube diodes.

CRYSTAL FILTER.

Circuit employing a crystal as a selective element. Used to discriminate against all signals except those at the center frequency of the crystal.

CRYSTAL HOLDER.

Case of insulating material for mounting the oscillator-plate therein, and external prongs for plugging into a suitable socket.

CRYSTAL LOUDSPEAKER.

Loudspeaker in which the mechanical displacements are produced by piezoelectric action.

CRYSTAL MICROPHONE.

Microphone which depends on the generation of an electromotive force by the deformation of a crystal having piezoelectric properties for its operation.

CRYSTAL MIXER.

Housing containing the crystal inputs for signal and local oscillator, and the IF output. Used in heterodyne detection for converting the received signal to a lower frequency before amplification.

CRYSTAL OPERATION.

Operation using crystal controlled oscillators.

CRYSTAL OSCILLATOR.

Oscillator circuit in which a crystal is used to control the frequency and to reduce frequency instability to a minimum.

CRYSTAL OVEN.

Container, maintained at a constant temperature, in which a crystal and its holder are inclosed in order to reduce frequency drift.

CRYSTAL PICKUP.

Phonograph pickup which depends for its operation on the generation of an electric charge by the deformation of a body (usually crystalline) having piezoelectric properties.

CRYSTAL RECTIFIER.

Electrically conductive, or semiconductive substance, natural or synthetic, which has the property of rectifying small radio-frequency voltages.

CRYSTAL SPEAKER.

Loudspeaker in which the mechanical forces result from the deformation of a crystal having converse piezoelectric properties.

CRYSTAL SYSTEM.

Group which includes all crystals containing the same number and kind of planes of symmetry. There are six crystal systems: isometric (cubical), tetragonal, orthorhombic, monoclinic, triclinic, and hexagonal.

CRYSTAL-AUDIO RECEIVER.

Similar to the crystal-video receiver except for the path detection bandwidth which is audio rather than video.

CRYSTAL-VIDEO.

Type of receiver in which the radio frequency energy is converted directly to video energy as it comes from the antenna by means of a silicon crystal.

CRYSTAL VIDEO RECEIVER.

Broad-tuning receiver consisting of a crystal detector and a high-gain video amplifier. Usually an intercept receiver.

CRYSTALLINE LENS.

Flexible inner lens of the eye which provides accommodation for sharply focusing near and distant objects.

CRYSTALLIZATION.

Condition where the smooth consistency of the metal is changed to small, sharp granules due to age, temperature change or movement.

CRYSTALLOGRAPHY.

Branch of physical science which deals with the geometrical form of crystals.

CS.

Material designation for copper wire-steel.

CSA (COMMUNICATIONS SERVICE AUTHORIZATION).

Call or subsidiary contract upon the general contracts with communications companies to provide specific facilities and services within the prescribed limits of the Communications Service Authorization.

CSgO (CHIEF SIGNAL OFFICER).**CST (CENTRAL STANDARD TIME).**

Mean time based on the 90th meridian, west longitude.

CT.

ITU designation for coastal telegraph station; Carrier telephone channel.

CT CUT.

Oscillator crystal plate of specified dimensions with an edge parallel to the X-axis and making an angle of $\pm 38^\circ$ with the Z-axis.

CTC (CENTER-TO-CENTER).**CTCF (CHANNEL AND TECHNICAL CONTROL FACILITY).**

Facility in a tape-relay station in the AIRCOM-NET which provides on-call patching.

CTE (COMMANDER TASK ELEMENT).**CTF (COMMANDER TASK FORCE).****CTG (COMMANDER TASK GROUP).****CTU (COMMANDER TASK UNIT).****CU.**

Material designation for copper wire.

CU RADIATION.

X-radiation emitted from a copper target (anticathode), or anode of an X-ray tube and ordinarily employed for the examination of quartz.

CUBICAL ANTENNA.

Antenna array, the elements of which are positioned to form a cube.

CUE SHEET.

Orderly tabulation of scheduled motion picture programs, indicating all cues.

CUPPINESS.

Defect in wire drawing which leads to fracture of the cut and cone type.

CUR. (CURRENT).

Drift of electrons past a reference point. The passage of electrons through a conductor. Measured in amperes.

CURIE.

Unit quantity of radium emanation of radon, defined as that quantity which is in equilibrium with one gram of radium.

CURIE X CUT.

Cut of piezoelectric crystal having its edges parallel to the X-, Y-, and Z-axes, flattened perpendicular to the X- and somewhat elongated parallel to the Y-axis.

CURIUM.

Element 96, made synthetically from uranium and plutonium by bombarding U238 and PU239 with 40 megavolt helium ions.

CURRENT.

Drift of electrons past a reference point. The passage of electrons through a conductor. Measured in amperes.

ABSORPTION. Current proportional to the rate of accumulation of electric charges within an imperfect isotropic dielectric. The rate of accumulation and hence the absorption current, decreases with time after any change of the potential gradient, and occurs with both an increase and a decrease of potential gradient, so that the absorption current is reversible.

ALTERNATING. Current continually changing in magnitude and periodically reversing in polarity.

ANODE. Current flowing in the anode (plate) circuit.

ANODE RAY. Current in a varified gas made up of the moment of positively charged particles, which have their origin in the anode and are of atomic dimensions.

BLEEDER. Current drawn continuously from a power pack to improve its voltage regulation or to increase the voltage drop value across a particular resistor.

DIRECT. Current which is constant in direction and essentially constant in magnitude.

EDDY. Current induced in a metal by a changing electromagnetic field.

GRID. Current between the cathode and the grid of vacuum tube.

GROUND RETURN. Vector sum of the currents in all conductors in an electrical supply line.

LONGITUDINAL. Current which flows in the same direction in the two wires of a pair using the earth as its return path.

OSCILLATORY. Current whose direction of flow periodically reverses as a result of a balance between the inductance and capacitance in the circuit through which it flows.

PEAK PLATE. Maximum instantaneous plate current flowing in a tube.

PLATE. Current flowing in the plate circuit of a vacuum tube.

PULSATING. Current of varying magnitude but constant direction.

RESIDUAL. Vector sum of the currents in several wires of an electrical supply circuit.

SATURATION. Current produced in the plate circuit of a vacuum tube when all of the electrons emitted by the cathode pass to the plate. It is sometimes referred to as the emission current.

SNEAK. Current which, while not particularly excessive, is above the carrying capacity of the equipment through which it flows.

SPACE. Total current flowing between the cathode and all other electrodes in a tube. This includes the plate current, grid current, screen grid current, and any other electrode current which may be present.

WAVELENGTH CHARACTERISTIC. Relation usually shown by a graph between the direct anode current per unit energy of the incident radiant flux and the wavelength of the flux.

CURRENT AMPLIFICATION.

Ratio of output to input currents of an amplifier, or transducer input circuit.

CURRENT AMPLIFIER.

Amplifier capable of delivering considerable current at a low voltage.

CURRENT, ANTENNA.

RF current that flows in an antenna.

CURRENT ATTENUATION.

Ratio of the current, of a transducer, in its input circuit to the current in a specified load impedance.

CURRENT INTELLIGENCE.

Spot information or intelligence that is of immediate interest and value to the users and which is usually furnished to them without delays incident to complete evaluation and interpretation.

CURRENT MARGIN.

Difference between the steady-state currents flowing through a telegraph receiving instrument corresponding, respectively, to the two positions of the telegraph transmitter.

CURRENT SATURATION.

Condition in which the plate current of a vacuum tube cannot be further increased by increasing the plate voltage. (Reference: PLATE SATURATION, VOLTAGE SATURATION.)

CURSOR.

1. Mechanical or electronic generated line which moves back and forth over another surface to delineate accurate readings.
2. Mechanical bearing line on a PPI-type display for reading target bearing. (Reference: BEARING CURSOR.)

CURSOR TARGET BEARING.

Target bearing as measured by a PPI cursor.

CURVATURE OF FIELD.

Aberration affecting the longitudinal position of images off the axis in such a manner that objects in a plane, perpendicular to the axis, are imaged in a curved or dish-shaped surface.

CURVE.

1. A bending without angles.
2. Analytically, a line or lines that may be precisely defined by an equation or equations.
3. Geometrically, a curve is the intersection of

two surfaces, or the path of a moving point, or the envelope of a moving line.

FREQUENCY RESPONSE. A graphical representation of the manner in which a circuit responds to different frequencies within its operating range.

GAS PRESSURE. Curve plotted on special paper and indicating the pressure read at selected valves in a gas pressure system (vertical) against the length of the cable (horizontal) used for locating leaks.

RESONANCE. Graphical representation illustrating the manner in which a tuned circuit responds to the various frequencies in the vicinity of the resonant frequency.

CURVE OF PURSUIT.

Type of interception in which the friendly airborne object is always headed towards the target.

CUSRPG (CANADA, UNITED STATES, REGIONAL PLANNING GROUP).**CUSTODIAN, U S (UNITED STATES) JOINT, UK (UNITED KINGDOM) ARMY.**

Officer charged with the actual custody, handling, and safe-guarding of the publications issued.

CUT. (CUTTER).

Electromechanical transducer which transforms an electrical input into a mechanical output, typified by mechanical motions which may be inscribed into a recording medium by a cutting stylus. (Reference: MECHANICAL RECORDING HEAD.)

CUT.

1. Crystal plane section with two parallel major surfaces cut in any orientation. Any given cut is specified by the direction normal to the major surface, or by special distinguishing symbols.
2. Two station fix in radio direction finding.
3. Disconnect; to open a circuit so that communications cannot be carried on.

CUT DOUBLE, TRIPPLE, ETC.

Make two (three, etc.) original recordings simultaneously.

CUT-OVER.

Rapid transfer of lines from one termination to another or from one facility to another.

CUTS-OFF.

Fails to permit satisfactory transmission above, or below, a specific frequency limit.

CUTS-OUT.

Interruption of communication as when an open circuit occurs. Implies a come and go condition.

CUTLER FEED.

Resonant cavity at the end of a waveguide, which feeds RF energy to the refelector of the spinner assembly.

CUTOFF.

1. Minimum value of bias which cuts off, or stops, the flow of plate current. With a constant plate voltage and no signal decreasing the bias from the cutoff valve will permit the plate current to flow again, while increasing it to or beyond the cutoff point keeps the plate current at zero.
2. Frequency at which the transmission loss exceeds by 10 db the loss at 1,000 cycles.
3. Frequency above or below which a selective circuit fails to respond.

CUTOFF ATTENUATOR.

Variable length of waveguide used below its cutoff frequency to introduce variable non dissipative attenuation.

CUTOFF FREQUENCY OF AMPLIFIER.

Frequency or frequencies at which the normal gain of an amplifier begins to decrease sharply.

CUTOFF FREQUENCY OF FILTER EQUIPMENT.

Frequency or frequencies at which attenuation begins to rise sharply.

CUTOFF FREQUENCY OF LINE.

Upper frequency limit, usually of a loaded transmission circuit, beyond which attenuation rises very rapidly.

CUTOFF LIMITING.

Limiting the maximum output voltage of a vacuum-tube circuit by driving the grid beyond cutoff.

CUTOFF SAW.

Crystal sawing machine with a downward hand-or-gravity-controlled movement; the work being held stationary.

CUTOFF WAVELENGTH.

Free space wavelength which corresponds to the cutoff frequency of a waveguide.

CUTOUT.

Pairs brought out of a cable and terminated at some place other than at the end of the cable.

CUTTER.

Electromechanical transducer which transforms an electrical input into a mechanical output, typified by mechanical motions which may be inscribed into a recording medium by a cutting stylus. (Reference: MECHANICAL RECORDING HEAD.)

CUTTER DISPENSER.

Device which, in operation, cuts window to a selected length and dispenses it.

CUTTING STYLUS.

Toll which cuts the groove into an original recording.

CV.

International Telecommunications Union designation for station open exclusively to the correspondences of a private agency.

CV (CRYSTAL-VIDEO) RECEIVER.

Receiver consisting of an antenna, a crystal detector and a video amplifier, the frequency band of operation being determined by the antenna only.

CW (CONTINUOUS WAVE).

Successive oscillations of waves, identical under steady-state conditions. Generally, radio waves are of constant amplitude and frequency.

CW (CARRIER WAVE) DOPPLER.

Comparison of transmitted and echo frequencies to give an aural indication of moving target.

CW (CARRIER WAVE) TRACK BREAKING OR VELOCITY GATE STEALING.

Classified definition. (Reference: AFM 100-50.)

CX (COMPOSITE, COMPOSITE LEG).

CYC (CYCLE).

1. One complete positive and one complete negative alternation of an alternating current.
2. Complete set of any recurrent valves.

DOT. One cycle of a periodic alternation between the signaling conditions, each condition having unit duration. Thus, in two-condition signaling, it consists of a dot, or marking element, followed by a spacing element.

DUTY. Cycle of starting, running, and stopping operations performed by equipment on intermittent duty. (Reference: DUTY FACTOR.)

SUNSPOT. Sunspot activity follows a cycle with an average of 11.1 years between successive minima. The usual cycle shows the variation of the 12-month running average sunspot number plotted against the months.

CYCLES PER SECOND.

One complete sequence of variations in an alternating current, including a rise to maximum in one direction, a return to zero, a rise to a maximum in the opposite direction, and a return to zero. The number of cycles occurring in one second is called the frequency.

CYCLIC SHIFT.

Electronic computer operation which produces a word in which characters are obtained by a cyclic permutation of the characters of a given word.

CYCLOTRON OR ATOM SMASHER.

Apparatus for imparting high speeds to electrons or ions by causing them to move in semi-circular paths in a magnetic field.

CYL (CYLINDER).

Cylindrical part of the engine in which the piston moves, and combustion takes place.

CYLINDER.

Cylindrical part of the engine in which the piston moves, and combustion takes place.

CYLINDER BLOCK.

Number of cylinder bores all cast in line and in one piece.

CYLINDER BORE.

Part of the cylinder in which the piston slides or moves.

CYLINDER HEAD.

Part which covers and seals the end of the cylinder and usually contains the valves.

CYLINDRICAL CONCAVE MIRROR.

Curved reflecting surface like the inside of one-half of a cylinder, used to focus light rays to a line.

CYLINDRICAL CONVEX LENS.

Lens having a straight surface in its longer dimension and a spherically curved surface at right angles to this direction.

CYLINDRICAL LENS.

Lens ground with a cylindrical surface instead of a spherical one.

CYLINDRICAL WAVE.

Wave whose equiphase surfaces form a family of coaxial cylinders.

CYROGENIC.

Pertaining to low temperatures or to apparatus for producing them.

D

D (DISTANTLY CONTROLLED).**D 30°**

ITU designation for directive antenna having maximum radiation in the direction of 30° (expressed in degrees from true North; from 0-360 degrees clockwise).

D/L (DATA LINK).

Electronic equipment which permits automatic transmission of information in digital form.

D/O (DIRECTOR (DEPUTY) OPERATIONS).

Member of the battle staff responsible for supervision of air-defense operations within the organization area of responsibility.

D-CABLE.

Two-conductor cable, each conductor having the shape of the capital letter D, with insulation between the conductors and between the conductors and the sheath.

D-INDICATOR.

Radar indicator which combines types B-and C-indicators. The signal appears as a bright spot with azimuth angle as the horizontal coordinate and elevation angle as the vertical coordinate. Each horizontal trace is expanded vertically by a compressed time sweep in order to facilitate separation of signal from noise and to give a rough range indication.

D-LAYER.

One of the lowest regular ionospheric layers. Sky waves normally are not reflected by this layer, but are absorbed by it.

D-REGION.

Region of the ionosphere below the E region or about 90 kilometers from the earth's surface.

D-SCAN.

Presentation combining B and C types. The signal appears as a bright spot with azimuth angle as the horizontal coordinate, and elevation angle as the vertical coordinate. Each horizontal trace is expanded vertically by a compressed time sweep to facilitate separation of signal from noise and gives a rough range indication.

D-SCOPE.

(Reference: D-SCAN).

DAILY KEYING ELEMENT.

Part of the specific key that changes at predetermined intervals, usually daily.

DA (DEPARTMENT OF THE ARMY).**DAF (DEPARTMENT OF THE AIR FORCE).**

Executive part of the Air Force establishment at the seat of government. Includes the Secretary of the Air Force, Headquarters, USAF, and the supporting staffs.

DAGMAR.

Project to synthesize the various return-to-base procedures for aircraft into a standard manual system. Average traffic capability of this system is 30 to 40 aircraft per hour, with a peak rate of up to 60 for very brief periods. Equipment for the system may include the AN/CPN-18 and AN/GPX-9 radar-IFF combination, plus the FPN-16 precision approach radar. Air traffic controllers and tower operators are also required.

DAMPENED IMPEDANCE.

Blocked impedance of a transducer is the impedance measured at the input when the impedance of the output system is made infinite. (Reference: BLOCKED IMPEDANCE.)

DAMPED OSCILLATION.

Oscillation which, because the driving force has been removed, gradually dies out, each cycle being smaller than the preceding in smooth, regular decay.

DAMPEN.

Place sound-absorbing material, such as draperies, in a radio studio or in an auditorium to prevent echoes.

DAMPENED WAVES.

Waves that progressively decrease in amplitude during successive cycles.

DAMPING.

1. Reduction of energy in a mechanical or electrical system by absorption or radiation.
2. Act of reducing the amplitude of the oscillations of an oscillatory system; hindering or preventing oscillation or vibration; diminishing the

sharpness of resonance of the natural frequency of a system.

DAMPING CONSTANT.

Napierian logarithm of the ratio of the first to the second to two values of an exponentially decreasing quantity separated by unit time.

DAMPING DIODE. Vacuum tube which damps the positive or negative half-cycle of an ac voltage.

DAMPING FACTOR.

Damping factor of any underdamped motion is, during any complete oscillation, the quotient obtained by dividing the logarithmic decrement by the time required by the oscillation.

DAMPING FACTOR OF AN INSTRUMENT.

Ratio of the deviations of the pointer (or marking device) in two consecutive swings from the position of equilibrium, the greater deviation being divided by the lesser. For practical purposes, it is sometimes convenient to express the performance of an instrument in terms of the reciprocal of the damping factor. This reciprocal of the ratio of the excess of the maximum momentary deflection (over the steady deflection) to the steady deflection, both expressed in angular degrees, when expressed as a percentage, is denoted by the term percentage overshoot.

DAMPING OF AN INSTRUMENT.

Dissipation of the kinetic energy of the moving element of the instrument. Two general classes of damping are: periodic, in which the pointer oscillates about the final position before coming to rest; and aperiodic, in which the pointer comes to rest without overshooting the rest position.

DANIELL'S CELL.

Cell having a copper electrode in a copper sulphate solution and a zinc electrode in dilute sulphuric acid or zinc sulphate solution, with the two solutions separated by a porous partition. It generates an essentially constant electromotive force of about 1.1 volts.

DAOD.

Classified definition. (Reference: AFM 100-50.)

DARAF.

Unit of elastance, which is the reciprocal of capacitance.

DARK CONDUCTION.

Residual electrical conduction in a photosensitive substance when not illuminated.

DARK DISCHARGE.

Electric discharge, occurring in a gas, that has no visible luminosity.

DARK SPOT.

Sometimes observed in a reproduced television image. Caused by the formation of electron clouds in front of the mosaic screen in the camera tube at the television transmitter.

DARK-SPOT SIGNAL.

Signal existing in a television system during scanning of a dark spot by the television camera.

DARK-TRACE TUBE.

Cathode-ray tube with a screen composed of a halide of sodium or potassium. The screen normally is nearly white, and wherever the electron beam strikes, it turns a magenta color which is of long persistence. The screen can be illuminated by a strong light source so that the reflected image may be made intense enough to be projected. (Reference: SKIATRON.)

DARMAR.

Classified definition. (Reference: AFM 100-50.)

D'ARSONVAL CURRENT.

High-frequency, low-voltage current of comparatively high amperage.

D'ARSONVAL GALVANOMETER.

Dc galvanometer consisting of a narrow, rectangular coil, freely suspended between the poles of a permanent magnet. Current sent through the coil produces the magnetic field that interacts with the permanent field and causes rotation of the coil.

D'ARSONVAL MOVEMENT.

Meter movement commonly used in precision instruments for dc measurements. It consists essentially of a small, lightweight coil of wire supported on jeweled bearings between the poles of

a permanent magnet. Spiral springs provide connections to the coil and keep the coil and its attached pointer at the zero position on the meter scale. When the direct current to be measured is sent through the coil, its magnetic field interacts with that of the permanent magnet and causes rotation of the coil and pointer.

DASH.

Dash is defined as three unit lengths of sustained signal (when transmitted, a dash will automatically be followed by one unit length of silence). Term used in radiotelegraphy.

DASHPOT.

Device using a gas or liquid to absorb energy, or retard the movement of the moving parts of a circuit breaker or other electrical device.

DATA.

1. Plural term collectively used to designate material serving as a basis for discussion; material may or may not be technical in nature. The singular of data is datum.

2. Information, particularly that used as a basis for mechanical or electronic computation.

DATA CIRCUIT.

Communication facility permitting transmission of digital data.

DATA LINK.

Electronic equipment which permits automatic transmission of information in digital form.

DATA-TIME-GROUP.

Date and time, expressed in digits and zone suffix, at which the message was prepared for transmission. (Expressed as six digits followed by zone suffix; first pair of digits denoting the date, second pair the hours, third pair the minutes.)

DATAAC.

Computer in the VOLSCAN system of automatic air traffic control. It receives continuous position reports on aircraft from automatic tracking-while-scanning channels called ANTRACs. The computer then automatically selects a scheduled arrival time for each aircraft and calculates heading and altitude orders which will make good

this schedule. Thus, DATAAC is an automatic controller. The DATAAC control orders may be relayed to the aircraft by voice or sent automatically over a data Link. The computer always selects the earliest possible time of arrival which does not conflict with aircraft already scheduled. Where such a schedule is possible, DATAAC issues a control order which heads the aircraft along the shortest possible path, or tangent path, to the final turn circle. In case there is a conflict with another schedule, DATAAC selects the earliest later 30-second interval which has no reservation. It then orders pilot to take a heading which is off-set from the tangent path heading. Thus, as the aircraft progresses along this longer path, it is delayed. As delay time drops, the magnitude of the heading offset gradually reduces until finally, when the delay has been accomplished, the aircraft, now on time, is on a tangent path. Thus, by heading control, delays are gradually used up, and the aircraft are delivered to the final turn with precise timing.

DATE.

1. Point of time at which a transaction or event takes place.

2. Point or period of time to which anything is referred as present, as to usage, style, knowledge, etc.

DAUPHINE TWINING.

Electrical twining.

DAVISSON COORDINATES.

Special system of curvilinear coordinates, used in plotting the emission characteristics of a vacuum tube.

DAY.

D. Term used to designate the unnamed day on which an operation commences, or is to commence. This operation may be the commencement of hostilities, the date of assault landing, a bombardment, etc. If more than one such event is mentioned in a single plan, any letter (except M) may be used.

M. Term used to designate the day on which mobilization is to begin. Though the term is M-day, related figures, unless otherwise specified, will refer to months before or after M-day.

P. Earliest point in time after D-day at which the rate of production of an item equals or exceeds the rate at which the item is required by the Armed Forces. From D-day to P-day, mobilization reserves are used to fill the gap between production and requirements.

S. Sailing date for a scheduled operation.

db (DECIBEL).

One-tenth of a bel, the number of decibels denoting the ratio of the two amounts of power being 10 times the logarithm to the base 10 of this ratio. The abbreviation db is commonly used for the term decibel.

DB (DOUBLE-BRAIDED).

DB METER.

Meter having a scale calibrated to read directly in decibel values at a reference level that must be specified (usually one milliwatt equals zero db). Used in AF amplifier circuits of broadcast stations, public address systems, and receiver output circuits to indicate volume level.

DB OVER ISOTROPIC SOURCE.

Measure of the directivity, and hence the directive gain, of an antenna relative to a hypothetical point source of radiation (the isotropic source).

DBA.

Expression used in conjunction with noise measurements. The reference level is -90bm, and the adjustment is dependent on the frequency band characteristics of the measuring device.

DBM.

1. Unit used for measuring absolute power levels; power in decibels measured for a one-milliwatt reference level.

2. Facsimile power level expressed as being a given number of db above or below a reference level of one milliwatt.

DBRN.

Unit of measurement of electrical circuit noise in which the noise is referred to as zero, or reference power level of one micromicrowatt at 1000CPS (90 db below one milliwatt).

DBU.

Measure of field strength expressed in decibels below one watt per square meter.

DBW.

Measure of power expressed in decibels below one watt.

DBWP (DOUBLE-BRAIDED, WEATHERPROOFED.)

DC (DIRECTION CENTER).

Physical facility of an air defense sector headquarters from which active air defense functions are directed. The direction center is equipped with an AN/FSQ-7 combat direction central.

dc (DIRECT CURRENT).

Unidirectional current which has an essentially constant average value.

DC AMPLIFIER.

Amplifier that is capable of amplifying small variations in direct current.

DC GENERATOR.

Rotating electric machine that converts mechanical power into dc power.

DC INSERTER STAGE.

Television transmitter stage that adds to the video signal a dc component known as the pedestal level.

DC PATCH BAY.

Specific patch panels provided for termination of all dc circuits and equipment used in an installation.

DC PICTURE TRANSMISSION.

Transmission of the dc component of the television picture signal. This component represents the background or average illumination of the overall scene, and varies only with overall illumination.

DC PLATE RESISTANCE.

Value or characteristic used in vacuum-tube computations. It is equal to the dc plate voltage

divided by the dc plate current and is given the sign Rp.

DC RECEIVER.

Radio receiver designed to operate from direct current power lines.

DC RESISTANCE.

Opposition to current flow offered by a circuit or body to an unvarying current.

DC RESTORATION.

Imposition, on a recurrent wave form, of a value of steady potential, obtained by rectification from that wave form, such that the trough or crest of the wave form reaches a desired level.

DC RESTORER.

Circuit which holds either amplitude extreme of a television or radar signal wave form to a given reference level of potential.

DC TRANSFORMER.

1. Device for measuring large values of direct current, in which the line current magnetizes an iron core surrounding the conductor or inclosed by a few turns of the conductor.
2. Term sometimes applied to a rotating machine used to convert direct current from one voltage to another.

DC TRANSMISSION.

Transmission of a television signal in such a way that the dc component of the picture signal is still present.

DCA (DIRECTION CENTER ACTIVE).

Complete direction center computer program which directs the computer in the performance of air-defense functions.

DCD (DOUBLE CHANNEL DUPLEX).**DCDS (DOUBLE-COTTON, DOUBLE-SILK-COVERED).****DCR (DIRECT CURRENT RESTORATION).****DCS (DOUBLE CHANNEL SIMPLEX).****DCS (DOUBLE-COTTON SINGLE-SILK COVERED).****DCS/M (DEPUTY CHIEF OF STAFF, MATERIEL).****DCS/O (DEPUTY CHIEF OF STAFF, OPERATIONS).****DCS/P (DEPUTY CHIEF OF STAFF, PERSONNEL).****DDD (DIRECT DISTANCE DIALING).**

Method of making toll calls under which the call can be dialed directly without the services of a telephone company operator.

DDM (DIFFERENCE IN DEPTH MODULATION).

In directive systems employing overlapping lobes as modulating signals, such as Instrument Landing Systems, a fraction obtained by subtracting from the percentage of modulation of the larger signal, the percentage of modulation of the smaller signal, and dividing by 100.

DDR (DIGITAL DATA RECEIVER).

Device for accepting digital signals in audio form from a data circuit and for presenting these signals in pulse form to digital equipment.

DDT (DIGITAL DATA TRANSMITTER).

Device for transmitting digital signals in pulse form and presenting these signals in audio form to digital equipment.

DE BROGLIE EQUATION.

Expression for the wavelength of the de Broglie wave associated with a moving electron. It states that the wavelength is equal to Planck's constant divided by the momentum of the electron.

DE BROGLIE WAVE.

Wave or wave group assumed in wave mechanics to be associated with an elementary moving particle such as an electron or a proton. (Reference: PHASE WAVE.)

DE-EMPHASIS.

Restoration of a pre-emphasized signal wave to its original form.

DE-ENERGIZE.

Stop the flow of current in a circuit, or remove the voltage from a circuit, as by opening a switch.

DE-ENERGIZED.

State of an apparatus or system when all power has been removed, as relay with no current flowing through its coil.

DE-ICER.

Heating circuit to melt ice from antenna assembly.

DE-ION CIRCUIT BREAKER.

Arc that forms when circuit is broken is magnetically blown into a stack of insulated copper plates, giving the effect of a large number of short arcs in series. Each arc becomes almost instantly de-ionized when the current drops to zero in the ac cycle, and the arc cannot re-form.

DE-IONIZATION POTENTIAL.

Potential at which ionization of the gas within a gas-filled tube ceases and conduction stops.

DE-IONIZATION TIME.

Time required for the control grid of a gaseous tube to regain control after plate current has been interrupted.

DEACCENTUATOR.

Network, or circuit, required in a frequency-modulation receiver to offset the pre-emphasis action introduced at the higher audio frequencies in a frequency-modulation transmitter. (Reference: DE-EMPHASIS.)

DEAD.

Free from any electric connection to a source of potential difference and from electric charge; not having a potential different from that of earth. The term is used only with reference to current-carrying parts which are sometimes alive or charged.

DEAD END.

1. End of a sound studio that has the greater sound-absorbing characteristics.
2. Portion of a tapped coil through which no current is flowing at a particular band-switch position.
3. Termination of a single open wire or group of wires on a cross arm, bracket, or knot.

4. Termination of a suspension strand.

DEAD END TOWER.

Antenna or transmission line tower designed to withstand unbalanced mechanical pull from all the conductors in one direction together with the wind strain and vertical loads.

DEAD LINE.

Telephone circuit disconnected from a central office.

DEAD RECKON.

Computer action resulting from a manually inserted instruction on a track, this action projects a track for six frames. This is accomplished by logical conclusions based on the assumption of continuity of previously known data. It temporarily prevents a track from being dropped.

DEAD RECKONING.

Procedure of advancing a known position to a given position at a later time by the addition of one or more vectors representing courses and distances. The expression estimated position is used when allowance is made for wind and current.

DEAD RECKONING TRACER.

Mechanical device on which a moving spot of light automatically indicates the approximate geographical position of the ship on which it is used. The direction of motion of the light is controlled by synchro data from the gyro compass.

DEAD ROOM.

Room so thoroughly sound-proofed that practically all sound is absorbed, and there is little reflection or echo.

DEAD SHORT.

Short circuit having minimum resistance.

DEAD SPACE.

Area or zone which is within range of a radio transmitter, but in which a signal is not received.

DEAD SPOT.

1. Geographic location in which signals from one or more radio stations are received poorly or not at all.

2. Portion or spot in the tuning range of a receiver in which stations are heard poorly or not at all.

DEAD TIME.

Time interval, in a counter vacuum tube, after recording an ionizing event required for the sheath of positive ions to move away from the anode wire to a position corresponding to the threshold field.

DEAD-CENTER POSITION.

Position in which a brush would be placed on the commutator of a dc motor or generator if the field flux were not distorted by armature reaction.

DEAD-FRONT SWITCHBOARD.

Switchboard having no live parts on the front of the panels.

DEADBEAT.

Coming to rest without vibration or oscillation. Thus, the pointer which a highly damped meter or galvanometer moves to a new position without overshooting and vibrating about its final position. (Reference: APERIODIC.)

DEADMAN.

1. Type of anchor for soft ground, usually made from short lengths of poles, logs, etc.
2. Support used in setting a pole with pikes.

DEATH RAY.

Ray capable of killing living cells. Ultra-violet rays of certain frequencies can kill bacteria; radio waves of certain frequencies can kill insects; X-rays have still greater destructive power.

DEBUG.

Term used in troubleshooting, meaning: to clear away the difficulties arising from imperfect design or construction of a set, and to make it operate satisfactorily.

DEBUNCHING.

Space charge effect that tends to destroy the electron bunching in a velocity-modulation vacuum tube.

DECADE BOX.

Special type of variable resistor or variable capacitor used chiefly in laboratory work. It contains two or more sections, with each section having 10 times the value of the preceding section and with each section divided into 10 equal parts. Each section has a 10-position selector switch or equivalent arrangement such that the box can be set to any desired value in its range.

DECADE RESISTANCE BOX.

Decade box containing two or more sets of 10 precision resistors.

DECAL.

Decalcomania; sometimes used for large characters in place of stenciling.

DECAY.

Disintegration of the nuclei of an unstable element due to the spontaneous emission of charged particles or energy quanta. Elements which decay are called radioactive.

DECAY CONSTANT.

Exponential constant of a heterogeneous mixture of radioactive material calculated from its observed rate of decay; a means of predicting future contamination intensities in given areas.

DECAYING CONDUCTION CURRENT.

Current which is related to the conduction current by a decreasing function of the time.

DECCA.

British continuous wave, differential distance, hyperbolic radio aid to navigation, in which the receiver measures and integrates the relative phase difference between the signals received from two or more synchronized ground stations. Because of the phase comparison technique used, the system has a high accuracy, with changes in position of a few yards being detectable. Range with accuracy is limited by sky-wave transmission which interferes with the uniform phase pattern of the signals. DECCA operates in the 70-130 kc frequency band. It is somewhat similar to LORAN, except that it utilizes continuous waves rather than pulses, and phase differences in RF signals rather than the difference

in arrival times. The transmissions from the master and slave stations are on different frequencies. These two frequencies are so related, however, that their multiplication by different whole numbers such as three or four will produce the same frequency. Phase comparison follows this frequency multiplication; a complete 360-degree shift occurring each time the receiving point moves from one hyperbolic line of position to the next adjacent line. This distance is called a "lane." More than one position line is required for a fix. The general arrangement of transmitters is one master station and three slave stations arranged in a star formation, and ordinarily referred to as the red, green, and purple slaves. The master and each slave form a pair of stations, and three complete systems of hyperbolic lines are formed to permit accurate full coverage of the area. The transmitters are unmodulated, continuous wave. However, the slave stations are more complex than the master because of the necessity of phase-locking and synchronizing their RF signals with the master. The distance between master and slave station is 80-100 miles. Operational range is about 250 miles. The system was originally designed for maritime navigation. Zone of "land" ambiguity is solved by a superimposed lower order of accuracy system, which is turned on systematically to assist the pilot or navigator. DECCA is widely used in Europe where the service is provided on a rental basis. It has been advocated as a helicopter navigation system in the U.S. It provides good service down to ground level, as it is not dependent upon line of sight transmission. ANDB is evaluating DECCA and other systems to determine the most suitable one for helicopter navigation.

DECEPTION.

1. Deliberate production of false or misleading echoes on enemy radars by the radiation of spurious signals synchronized to the radar, or by the reradiation of the radar pulses from extraneous reflectors.

2. Classified definition. (Reference: AFM 100-50.)

ELECTRONIC. Radiation or reradiation of electromagnetic waves in a manner intended to mislead the enemy in the interpretation of data received by his electronic equipment.

IMITATIVE. Transmission of messages in the enemy's communication channels with the intention of deceiving the enemy.

MANIPULATIVE. Manipulation of traffic in friendly communication channels with the intention of deceiving the enemy.

RADIO. Employment of radio sets to deceive the enemy. Radio deception includes sending false dispatches, using deceptive headings, employing enemy call signs, etc.

DECEPTION IN CHALLENGE.

Classified definition. (Reference: AFM 100-50.)

DECEPTION IN REPLY.

Classified definition. (Reference: AFM 100-50.)

DECIBEL.

Unit used to indicate the ratio between power voltage, currents, amplitudes, signal levels, etc., and a base or zero level. The common zero level now used is one milliwatt in 600 ohms and when so used the unit is abbreviated as "dbm". Plus db's indicate a gain, minus db's indicate a loss. When used to express the voltage gain of an amplifier, the db is only correctly used when input and output impedances are the same. Db's equal $10 \log_{10}$ (power ratio) or $20 \log_{10}$ (voltage or current ratio).

DECIBELS, ADJUSTED.

Expression used in conjunction with noise measurements. The reference level is 90 dbm, and the adjustment is dependent on the frequency band weighting characteristics of the measuring device. Measurements may be made with a Western Electric 2B measuring set or equivalent.

DECIBELS ABOVE OR BELOW ONE MILLIWATT.

Quantity of power expressed in terms of its ratio to one milliwatt.

DECIMAL ATTENUATOR.

System of attenuators so arranged that a voltage or current can be reduced decimally.

DECIMAL NUMBER SYSTEM.

(Reference: POSITIONAL NOTATION.)

DECIMAL POINT.

(Reference: POINT.)

DECIMETRIC WAVES.

Electromagnetic waves having wavelengths between 0.1 and 1 meter.

DECIPHER.

Convert an enciphered message into its equivalent plain text by means of a cipher system.

DECISION.

Clear and concise statement of the line of action intended to be followed by the commander as the one most favorable to the successful accomplishment of his mission.

DECISION ALTITUDE.

Term used in connection with guided missiles. It is the highest altitude at which a defender can identify a missile. (Reference: UNMASKING ALTITUDE.)

DECK-TILT CORRECTION.

When a spinner base is tilted with respect to the horizontal, changing the elevation of the reflector causes a small rotation about a true vertical axis. Thus, a bearing error is introduced since bearing is read directly from the rotation of the spinner base. Removal of this error is called the deck-tilt correction.

DECLASSIFY.

Remove the security classification of an item of classified matter such as a document or an item of material.

DECLINATION.

1. Arc between a point and the equator measured on a great circle passing through the poles and perpendicular to the equator.
2. Angular difference between the normal indication of a magnetic compass and that of true north and south.

DECLINOMETER.

Instrument for measuring magnetic declination, consisting essentially of a delicately suspended magnet and a means for measuring the angular position of the magnet with respect to true north.

DECODE.

1. Convert an encoded message into its equivalent plain text.
2. Section of a code book in which the code groups are in alphabetical, numerical or other systematic order.

DECODER.

1. Device for decoding a series of coded signals.
2. Automatic telephone relay tape translator which determines, from the office code of each call, the information required for properly recording the call through the switching train. Each decoder has means, such as a cross-connecting field, for establishing the controls desired and for readily changing them.
3. Electronic computer network or system in which a combination of inputs is excited at one time to produce a single output. (Reference: MATRIX.)

DECODING MATRIX.

Device which can decode many input lines into a single output line.

DECOMPOSITION POTENTIAL.

Minimum potential at which an electrochemical process can take place continuously at an appreciable rate.

DECONTAMINATE.

Process of restoring the original condition of low emission to the grid of contaminated oscillator vacuum tubes in radar equipment.

DECOUPLER.

Circuit for eliminating the effect of common impedance coupling.

DECOUPLING.

Prevention of transfer or feed back of energy from one circuit to another.

DECOUPLING CIRCUIT.

Circuit used to prevent interaction of one circuit with another.

DECOUPLING FILTER.

Filter used in a decoupling circuit to prevent the interaction of two circuits.

DECOUPLING NETWORK.

1. Network which is used to prevent the interaction of two circuits.
2. Network of capacitors and chokes, or resistors, placed in leads which are common to two or more circuits to prevent unwanted and harmful interstage coupling.

DECOUPLING RESISTANCE.

Resistor, usually of high value, used to prevent interaction of two circuits.

DECOY.

Reflecting object used in radar deception, such as a spar buoy, a group of streamers hung from a captive balloon, etc.

DECREMENT.

Progressive diminution in the value of a variable quantity and the amount by which a variable is decreased. When applied to damped oscillations, it is usually called damping factor.

DECREMETER.

Instrument for measuring the logarithmic decrement (damping) of a train of waves.

DECRYPT.

Convert a cryptogram into plain text by reversal of the encryption process.

DECTRA.

British radionavigational aid which is designed to provide navigational coverage over sections of a specific route, especially over long oceanic crossings. This system uses a technique similar to existing DECCA installations, and is comprised of a pair of transmitting stations, a master and a slave, at each end of the route. DECCA indicating equipment can be used with this system.

DEEP FREEZE.

Contract with Commercial Cable Company for lease of teletype channels in their proposed new transatlantic cable linking the US, Nova Scotia, Newfoundland, Greenland, Iceland, and the UK.

DEFENSE VISUAL FLIGHT RULES.

Rules applicable to visual flight rules (VFR) which originate within or penetrate an air defense identification zone.

DEFERRED.

A message precedence designation. (Reference: PRECEDENCE DESIGNATIONS, MESSAGE.)

DEFINITION OR RESOLUTION.

1. Fidelity with which the detail of an image is reproduced. When the image is sharp and has definite lines and boundaries, the definition is said to be good.
2. Definition in a given direction is equal to the width of the narrowest isolated line of subject copy perpendicular to that direction, for which the response of the facsimile system will just reach the steady-state value attained for a larger area of the same density.

DEFLECTING COIL.

Inductor used to produce a magnetic field that will bend the electron beam a desired amount in a cathode-ray tube of an oscilloscope, television receiver, or television camera.

DEFLECTING ELECTRODE.

Electrode to which a potential is applied for the purpose of moving an electron beam in a horizontal or vertical direction.

DEFLECTING FORCE OF RECORDING INSTRUMENT.

Force at the recording point, in the direction of its motion, produced by the electrical quantity to be measured and acting through the instrument.

DEFLECTION.

Movement of the electron beam in a cathode-ray tube created by electromagnetic or electrostatic fields, which are varied to cause the light spot

to traverse the face of the tube in a predetermined pattern.

ELECTROSTATIC. Deflecting an electron beam by applying a voltage between plates mounted inside a cathode-ray tube.

MAGNETIC. System using electromagnetic fields for the deflection of electron beams, as in cathode-ray tubes.

DEFLECTION COILS.

Coils placed about the yoke of a cathode-ray tube to cause the displacement of the electron stream by the magnetic field produced within the tube as the result of current flowing in the coils.

DEFLECTION FACTOR.

Reciprocal of the deflection sensitivity of a cathode-ray tube. It is, therefore, the amount of change in the deflecting field that will cause unit displacement of the electron beam at the screen. It may be expressed as volts per inch or deflecting coil current per inch.

DEFLECTION PLATES.

Two pairs of parallel electrodes, the pairs set one forward of the other and at right angles to each other, parallel to the axis of the electron stream, within cathode-ray tube. In applied potential produces an electric field between each pair which, by varying the applied potential may be varied, to cause a desired angular displacement of the electron stream.

DEFLECTION POLARITY OF AN OSCILLOSCOPE.

Relationship between the direction of displacement and the polarity of the applied signal wave.

DEFLECTION SENSITIVITY OF A CATHODE-RAY TUBE.

Quotient of the displacement of the electron beam at the place of impact by the change in the deflecting field. Usually expressed in millimeters per volt applied between the deflection plates, or in millimeters per gauss of the deflecting magnetic field.

DEFLECTION YOKE.

Assembly of one or more coils, the magnetic fields of which deflect an electron beam.

DEFRUITING.

Method by which asynchronous returns are eliminated in radar beacon systems.

DEG (DEGREE).

1. Division identified by a whole number on a thermometer. One degree change in temperature in the centigrade system is equal to one-hundredth of the difference in temperature between that of melting ice and boiling water, while one degree in the Fahrenheit system is equal to 1/180th of this difference in temperature.

2. Angular unit of measure equal to 1/360th of a circle.

DEGASSING.

Process of driving out and exhausting any gases that are occluded in the electrodes and other parts of a vacuum tube and that would not be removed by evacuation alone.

DEGAUSSING.

Term used to describe a means of neutralizing the magnetic field of the hull of a ship or a submarine as a protection against magnetic mines or magnetic anomaly detectors.

DEGAUSSING CABLE.

Cable arranged around the hull of a ship and fed with a current of the correct value to neutralize the magnetic effect of the hull. The adjustment is made at a degaussing station equipped with underwater equipment to indicate when the resultant magnetic field has been sufficiently weakened so that it will not actuate the magnetic striker of a mine.

DEGENERACY.

Resonant device condition where two or more modes have the same resonant frequency.

DEGENERATION.

Process whereby a part of the output power of an amplifying device is returned to its input circuit in such a manner that it tends to cancel the input. (Reference: **NEGATIVE FEEDBACK.**)

DEGRADATION OF ENERGY.

1. Process whereby available energy becomes unavailable as by conversion into heat. If the

unavailable energy is allowed to escape, the term dissipation is more apt to be used.

2. Transformation of radiation of given type into a form having lower frequency and lower quantum energy.

DEGREE.

1. Division identified by a whole number on a thermometer. One degree change in temperature in the centigrade system is equal to one-hundredth of the difference in temperature between that of melting ice and boiling water, while one degree in the Fahrenheit system is equal to 1/180th of this difference in temperature.

2. Angular unit of measure, equal to 1/360th of a circle.

DEGREE OF CURRENT RECTIFICATION.

Ratio between the average unidirectional current output and the RMS value of the alternating-current input from which it was derived.

DEGREE OF VOLTAGE RECTIFICATION.

Ratio between the average unidirectional voltage and the RMS value of the alternating voltage from which it was derived.

DEHUMIDIFIER.

Mechanical refrigerating device used in central offices to remove moisture from the air.

DEHYDRATING UNIT.

Used for removing moisture from the air.

DEL (DELEGATION).

One or more persons commissioned to represent others, as in a convention.

DELAY.

1. Time required for a signal to pass through a device or a conducting medium.
2. Time which elapses between the instants at which any designated point of a transmitted wave passes any two points of a transmission circuit between which the delay is measured or specified. Such delay is primarily determined by the constants of the circuit, and is measurable in milliseconds or microseconds.

ABSOLUTE. Time interval between the transmission of two synchronized signals.

ALTITUDE. Synchronization delay introduced between the time of transmission of the radar pulse and the start of the trace on the indicator, for the purpose of eliminating the altitude hole on a PPI-type display.

INTERROGATION SUPPRESSED TIME. Overall fixed time delay between transmission of an interrogation and reception of the reply to this interrogation at zero distance.

SKY-WAVE TRANSMISSION. Amount by which the time of transit from transmitter to receiver of a pulse, carried by sky waves reflected once from the E-layer, exceeds the time of transit of the same pulse carried by ground waves.

TRANSPONDER SUPPRESSED TIME. Overall fixed time delay between reception of an interrogation and transmission of a reply to this interrogation.

DELAY BRAKE.

Device employed to delay the opening of a unit of window.

DELAY CIRCUIT.

1. Circuit which introduces a time delay in the passage of a pulse or signal from one part of a circuit to another.
2. Circuit which stores a pulse for a specified time.

DELAY DISTORTION.

1. Form of distortion which occurs when the envelope delay of a circuit or system is not constant over the frequency range required for transmission.
2. Form of distortion which results from constancy in the relation between intrinsic delay and frequency due to nonlinear phase vs. frequency relation.
3. Amount of variation in delay for various frequency components of the facsimile signal,

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usually expressed in micro-seconds from an average delay time.

Note. Delay distortion of a communication circuit used for TXC equipment should be not more than 300 micro-seconds for good picture quality.

DELAY EQUALIZER.

1. Device which adds delay at certain frequencies to a circuit in such a manner as to reduce the delay distortion.
2. Corrective network which is designed to make the phase delay or envelope delay of a circuit or system substantially constant over a desired frequency range.

DELAY LINE.

1. Real or artificial transmission line or equivalent device designed to introduce time delay in a signal or wave.
2. Color television transmission line or similar delay device in luminance channel which delays Y signal to compensate for phase differences in transmission primary channels.

DELAY PPI (PLAN POSITION INDICATION).

Indicator in which the start of the sweep is delayed after the trigger, allowing distant targets to be displayed on a short-range scale that provides an expanded presentation.

DELAY UNIT.

Unit of a radar system in which pulses may be delayed a controllable amount.

DELAY-LINE MEMORY.

(Reference: DELAY-LINE STORAGE.)

DELAY-LINE STORAGE.

Electronic computer storage or memory device consisting of a delay line and means for regenerating and reinserting information into the delay line.

DELAYED AUTOMATIC VOLUME CONTROL.

Automatic volume-control circuit that acts only

on signals above a certain strength. It thus permits reception of weak signals even though they may be fading, whereas normal automatic volume control would make the weak signals weaker. The delayed action is obtained by introducing a bias voltage that is in series with and opposes the automatic volume-control voltage.

DELAYED SWEEP.

Sweep of the electron beam of a cathode-ray tube in which the beginning of the sweep is delayed for a time after the pulse which initiates the sweep.

DELAYED TEST.

Service test of a battery made after a specified period of time and is usually made for comparison with an initial test to determine shelf depreciation.

DELEGATION.

One or more persons commissioned to represent others, as in a convention.

DELINEATION.

Accurate representation on a map of physical and cultural features of the earth by means of lines and symbols.

DELIVERY GROUP.

Group of letters assigned to represent a command, activity, or unit assigned to facilitate delivery of messages.

DELIVERY INDICATING GROUP.

Delivery group which, while indicating a specific set of addresses, may also indicate the identity of the originator and show which addresses are action or information.

DELIVERY STROKE.

Stroke of a pump during which the fluid in the pump is forced out of the cylinder.

DELLINGER EFFECT.

Sudden ionospheric disturbances which affect all sky-wave transmission in the daylight portion of the earth. Field intensities are reduced greatly due to this cause.

DELRAC.

British radionavigational system designed to provide worldwide coverage using 21 pairs of master-slave stations; 3000-mile range for each pair of stations is claimed, using frequencies in the 10-14 kc band. A continuous ambiguity-resolving process is included. DECCA indicating equipment can be used with this system.

DELTA CIRCUIT.

Combination of three resistors or other circuit components connected in series to form a triangle.

DELTA CONNECTION.

Connection of a three-phase system so that the phases form a triangle.

DELTA MATCHING TRANSFORMER.

Method of matching an open-wire transmission line to half-wave antenna by spreading out the upper end of the line and connecting them directly to the antenna to form a triangle.

DELTA RAYS.

Electrons emitted by substances when bombarded by alpha particles.

DEMAGNETIZATION CURVE.

Portion of the hysteresis loop of a magnetic material, giving practically all the required characteristics of the material for use as a permanent magnet. The curve shows the peak value of residual induction (Br) and the manner in which magnetization reduces to zero as demagnetizing force (H) is applied.

DEMAGNETIZE.

Remove magnetism from a magnetized object, as by heating or by placing it in a strong ac field.

DEMAND FACTOR.

Power distribution ratio of the maximum demand of a system to the total connected load of the system.

DEMAND METER.

Device which indicates or records the demands. A demand meter records or indicates the maximum average load over any specified time interval, or the average load over a number of equal time intervals.

DEMAND OF AN INSTALLATION OR SYSTEM.

Load at the receiving terminals averaged over a specified interval of time. Expressed in kilowatts, amperes, or other suitable units.

DEMAND RECORDER.

Instrument that records graphically the average value of the load in a circuit during successive short periods.

DEMODULATION.

1. Process wherein a wave resulting from previous modulation is employed to derive a wave having substantially the characteristics of the original modulating wave.

2. Process of extracting the signal intelligence from a modulated carrier wave. (Reference: DETECTION.)

DEMODULATOR.

1. Facsimile device which detects an amplitude-modulated signal and produces the modulating frequency as a dc signal of varying amplitude. This type of unit is used to provide keying signal for a frequency-shift exciter unit for radio facsimile transmission.

2. Device which operates on a carrier wave so as to recover the wave with which the carrier was originally modulated. (Reference: DETECTOR.)

DEMON.

Classified definition. (Reference: AFM 100-50.)

DEMOUNTABLE TUBE.

High-power radio tube having a metal envelope with porcelain insulation. It can be taken apart for inspection and for renewal of electrodes.

DENATURE.

1. Term used for controlling or contaminating the explosive qualities of plutonium.

2. Make alcohol unfit to drink.

DENDRITE.

Crystal skeleton which grows from a nucleus during the solidification of metals.

DENSITOMETER.

Form of photometer used especially for measuring the density of silver deposits on photographic plates or films.

DENSITY.

1. Measure of the light-reflecting or transmitting properties of an area.
2. Ratio of the mass of a substance to the volume of the specimen.
3. Term expressing the closeness of any space distribution.
4. Measure of the light-reflecting properties of an opaque type of facsimile copy or the light-transmission properties of a film. Expressed as \log_{10} (% light reflected for opaque copy or transmitted for film).

DENSITY STEP TABLET.

Facsimile test chart consisting of a series of areas. The density of the areas increases from a low value to a maximum value in steps. (Reference: STEP TABLET.)

DEP (DEPUTY).

1. Person authorized to act for, or in the place of, his immediate superior.
2. Title given an officer who performs the duties of his superior during his absence.
3. Title given a staff officer subordinate to a vice commander or to a vice chief of staff, heading one of the major subdivisions of the staff.

DEPARTMENT OF DEFENSE.

1. Entire military establishment of the United States.
2. Main subdivision of the executive branch of the federal government, charged with administration, management, and policy determination of the entire military establishment of the US.

DEPOLARIZER.

Chemical used in some primary cells to prevent polarization (formation of bubbles of hydrogen) at the positive electrode.

DEPOSITION.

Depositing a coating on a surface, as by electroplating.

DEPOT.

Facility for the receipt, classification, storage, accounting, issue, maintenance, procurement,

manufacture, assembly, research or salvage of supplies, or for the reception, processing, training, assignment, and forwarding of personnel replacements. It may be an installation or activity of the ConUS or area of operations.

DEPOT MAINTENANCE.

Maintenance of material which involves a major overhaul or complete rebuilding of parts, sub-assemblies, and/or the end item as required. Such maintenance is intended to augment stocks of serviceable equipment or to support lower levels of maintenance by the use of more extensive shop equipment and personnel of higher technical skill than are available for organizational or field maintenance activities.

DEPRESSION.

Sensitivity-time control adjustment of initial gain at zero range.

DEPRESSION CONTOUR.

Closed contour, inside which the ground is at a lower elevation than outside.

DEPTH.

Limits, with respect to distance, within which objects may be seen with satisfactory definition under a given set of conditions.

DEPTH OF CUT.

Depth of which the stylus penetrates the recording lacquer of a recording disk.

DEPTH PERCEPTION.

Ability to see in depth or three dimensions.

DERIVED UNITS.

Units of a system of units which are derived from the fundamental units by the application of physical laws.

DES (DESTROYER).

Name occasionally applied to certain twin-engined fighter-bombers before and during World War II, namely the FW-187 and A-20 aircraft.

DESICCANT.

Chemical, such as silica gel, having the ability to absorb water from the air. Used to dehumidify packaged equipment.

DESICCATOR.

Unit containing a chemical which absorbs water from the air. Often used to keep the air dry inside of a piece of equipment.

DESIGN OBJECTIVES.

Electrical performance characteristics for communication circuits which are based on reasonable engineering estimates of the performance required, but which have not been confirmed by actual measurement of operating circuits. A design objective is, in reality, a projected standard, to serve until such time as a system standard can be established by actual measurement, under operating conditions, of the developed circuit.

DESIGNATED ENGINEERING-INSTALLING AGENCY.

Agency designated to perform the installation engineering or installation of a particular facility. Designations conform to Air Force directives, and while these responsibilities normally are assigned to airways and air communications services or to air materiel commands, other major air commands also may be so designated.

DESIGNATION.

Name plate or marker; also, the information contained thereon.

DESIGNATION STRIP.

Strip of paper with a transparent covering used to mark the assignment of jacks or other apparatus below it.

DESK FAX.

Western Union system employing compact facsimile sets installed on the desk of the user. Connected to local Western Union facilities, the set eliminates the delivery and pickup of telegrams.

DESK STAND.

Movable pedestal or stand (adapted to rest on a desk or table) which serves as a mounting for a transmitter of a telephone set, and which ordinarily includes a hook for supporting the associated receiver when not in use.

DESTROYER.

Name occasionally applied to certain twin-engined fighter-bombers before and during World War II, namely the FW-187 and A-20 aircraft.

DESTRUCTOR

Small unit containing an explosive charge, sometimes used to damage the interior of a piece of equipment so that the enemy cannot use or reconstruct the equipment. (Reference: DETONATOR.)

DET (DETACHMENT).

1. Part of a unit separated from its main organization for duty elsewhere.
2. Temporary military or naval unit formed from other units or parts of units.
3. Military or naval unit smaller than a company.

DETAIL.

1. Measure of the sharpness of a recorded facsimile copy. Generally related to the number of lines scanned per inch.
2. Square root of the ratio between the number of scanning lines per unit length and the definition in the direction of the scanning line. A measure of the sharpness of the recorded facsimile copy.

DETECTION.

1. Process of extracting the audio or video-frequency component from the modulated RF signal.
2. Classified definition. (Reference: AFM 100-50.)

HETERODYNE. Detection (or conversion) by means of the heterodyne principle; used in the generation of the intermediate frequency of a superheterodyne receiver, and in making CW signals audible.

PLATE. Operation of a vacuum-tube detector at or near plate cutoff, so that the input signal is rectified in the plate circuit.

RADIO. Detection of the presence of an object by radio location, without precise determination of its position.

DETECTOPHONE.

Instrument for listening to conversation secretly, without the knowledge of the speakers. It consists essentially of a high-sensitivity, nondirectional microphone concealed in the room and connected to an amplifier and headphones in a nearby room. Sometimes the microphone feeds into a small radio transmitter of a wired wireless transmitter broadcasting over power lines, permitting the listener to be farther away.

DETECTOR.

1. Rectifier tube, crystal, or dry disc by which a modulation envelope on a carrier, or the simple off-on state of a carrier, may be made to drive a lower-frequency device.
2. Stage or circuit in a radio set that demodulates the RF signal into its audio or video component.
3. Receiver circuit which derives the desired sound from the modulated carrier wave.

ANTENNA Device consisting of an antenna and electronic equipment to warn aircraft crew members of their being observed by radar sets. These units are usually located in the nose or tail of the aircraft and illuminate a light on one or more panels when radar signals are detected.

BRADLEY. Single-stage, locked-in oscillator type of FM detector which uses a special heptode vacuum tube.

DIODE. Diode used in a demodulation circuit. Detection may be half or full wave rectification.

FIRST. Vacuum tube in a superheterodyne receiver in whose circuit the signal being received and the local-oscillator signal are combined to produce the IF signal. (Reference: MIXER.)

GRID-LEAK. Triode or multi-electrode tube in which rectification occurs because of electron current to the grid. The voltage associated with this flow through a high resistance in the grid circuit appears in amplified form in the plate circuit.

HETERODYNE. Detector incorporating a local oscillator (called a beat-frequency oscillator), used to convert an incoming RF signal to an audible tone by the heterodyning process.

PLATE-CIRCUIT. Detector functioning by virtue of nonlinearity in its plate-circuit characteristic.

POWER. Detector tube which operates with plate voltage sufficiently high to allow handling of strong input signals without appreciable distortion.

SECOND. Superheterodyne receiver stage that separates the intelligence from the modulated intermediate frequency.

TRAVELING. RF probe which incorporates a detector; used to measure the standing wave ratio in a slotted-line section.

DETECTOR BALANCED BIAS.

Circuit that automatically limits the current through the second detector after a delay determined by the constants. DBB prevents occurrence of spurious signals. It is similar to the FPC.

DETECTOR CIRCUIT.

Portion of a receiver which recovers the audible signal from the modulated RF carrier wave.

DETENT.

Stop or checking device, as a pin, lever, etc., on a ratchet wheel or the like.

DETONATOR.

Small unit containing an explosive charge, sometimes used to damage the interior of a piece of equipment so that the enemy cannot use or reconstruct the equipment. (Reference: DESTRUCTOR.)

DETUNE.

Adjusting a circuit so that it is not resonant to an applied frequency.

DEUTERIUM.

Hydrogen isotope, the atomic weight of which is approximately 2, its atomic structure is the same as that of hydrogen except that a neutron is added to the nucleus.

DEUTERON.

Nucleus of deuterium, a hydrogen isotope having an atomic weight or mass of approximately 2.

DEV (DEVELOP).

Subject to the action of chemical agents for the purpose of bringing to view the invisible or latent image produced by the action of light on a sensitized surface.

DEVELOPMENTAL BROADCAST STATION.

Station licensed to carry on development and research for the advancement of broadcast services.

DEVELOPMENTAL MODEL.

Model designed to meet performance requirements of the specification or establish technical requirements for production equipment. This model need not have the required final form factor or necessarily contain parts of final design. It may be used to demonstrate the reproducibility of the equipment.

DEVIATION.

1. Term used in frequency modulation to indicate the amount by which the carrier or resting frequency increases or decreases when modulated. It is usually expressed in kilocycles.
2. Turning aside from a course.
3. Bending of light from its path.

FLIGHT-PATH. Difference between the flight track of an aircraft and the flight path, expressed in terms of either angular or linear measurement.

FREQUENCY. Frequency-modulation peak difference between the instantaneous frequency of the modulated wave and the carrier frequency.

MAXIMUM SYSTEM. Greatest deviation in frequency specified in the operation of a system.

PHASE. Phase modulation peak difference between the instantaneous angle of the modulated wave and the angle of the carrier.

SLOPE. Difference between the projection in the vertical plane of the actual path of movement

of an aircraft and the planned slope for the aircraft expressed in terms of either angular or linear measurement.

DEVIATION ALARM.

Unit which gives warning indication when synchroerror exists due to failure of excitation, amplifier, etc.

DEVIATION DISTORTION.

Distortion in an FM receiver due to inadequate bandwidth and inadequate amplitude-modulation rejection or to inadequate discriminator linearity.

DEVIATION RATIO.

Term used in frequency modulation to indicate the ratio of the maximum amount of deviation of a fully modulated carrier to the highest audio frequency being transmitted.

DEVIATIVE ABSORPTION.

Absorption that occurs at frequencies near the critical frequency. It occurs in conjunction with the slowing up of radio waves near the critical frequency, upon reflection from the ionosphere.

DEW.

Atmospheric moisture which condenses, in liquid form, upon objects cooler than the air, especially at night.

DEW LINE (DISTANT WARNING LINE).

Automatic radar warning net or fence which will extend for 3000 miles along the Arctic circle from Alaska to Greenland. This net is intended to give the earliest possible warning of the approach of enemy planes. When hostile planes are detected, a warning will be flashed to air defense command centers in Canada. From these centers, the alert will be relayed in a few seconds to American air defense centers. Automatic features incorporated in the radar equipment will eliminate the need for constant attention by human observers. Hence, operation of the DEW LINE stations will require a greatly reduced number of personnel than that required by a standard radar station.

DEW POINT.

Temperature at which, under ordinary conditions,

condensation begins in a cooling mass of air. It varies with the specific humidity.

DEXTROROTATORY.

Name applied in the field of optics to substances which rotate the plane of polarization to the right.

DF (DIRECTION FINDER OR DIRECTION).

1. Radio aid to navigation which determines the direction of arrival of a radio signal by measuring the orientation of the wavefront or of the magnetic or electric vector of a radio wave. Direction-finding sets can be combined into nets to provide a fix on a transmitted signal. In addition to purely navigation functions, such nets can be used for SAR and balloon tracking purposes.

2. Used by the British to indicate radar.

DG (DOUBLE-GROOVE).

Descriptive terminology of insulators.

DG (DIFFERENTIAL GENERATOR) SYNCHRO AMPLIFIER.

Synchro differential generator driven by servo system. Generally used with oscillator servo or deck-tilt correction.

DGDP (DOUBLE-GROOVE, DOUBLE-PETTICOAT).

Descriptive terminology of insulators.

DI (DEVIATION INDICATOR).

DIAGNOSTIC ROUTINE.

Electronic computer routine designed to locate either a malfunction in the computer or a mistake in coding. (Reference: CHECK, PROGRAMMED.)

DIAGONAL SYMMETRY AXIS.

Synonymous with A-axis or X direction.

DIAGRAM.

Visual aid such as: schematics, maps, prints, charts, etc.

APPLICATION SCHEMATIC. Pictorial representation in which symbols and lines are used to illustrate the interrelation of a number of circuits.

BLOCK. Diagram in which the essential units of any system are drawn in the form of blocks, and their relation to each other indicated by appropriate connecting lines.

SCHEMATIC CIRCUIT. Functional circuit diagram in which the component parts are represented by schematic symbols.

TACTICAL CIRCUIT. Line drawing of the circuits of a communications net, showing the number, kind, and location of lines and all headquarters and subordinate units, within security requirements, by code names and coordinates.

TRAFFIC. Chart, illustration, or drawing used to show the movement and control of traffic over a communication system.

WIRING. Drawing that shows electrical equipments and/or component parts together with all the wiring that interconnects these equipments and/or parts.

DIAL.

Manually operated rotating device for producing direct current impulses for the control of dial switching equipment.

START LAMP. Lamp used with automatic position dialing to indicate that the connecting circuit is ready to receive dial pulses.

DIAL CABLE.

Braided cord or flexible wire cable used to make a tuning knob control the position of the pointer or dial which indicates the frequency to which a radio receiver is tuned.

DIAL CENTRAL OFFICE.

Telephone or teletypewriter office where necessary automatic equipment usually is located for connecting two or more users together by wires for communication purposes.

DIAL CORD.

(Reference: DIAL CABLE.)

DIAL EXCHANGE.

Exchange in which all calls originate by mechanical dialing.

DIAL LIGHT.

Pilot lamp which illuminates dials such as the

tuning dial of a radio receiver.

DIAL OF A METER.

Graduated circle, or circular arc, over which a dial pointer moves.

DIAL POINTER OF A METER.

Part of the register which moves over the dial and points to the number on the divisions of the dial.

DIAL PULSE.

Interruption in the direct current flowing through the loop of a calling telephone, produced by the opening and closing of the dial pulse springs of a calling telephone in response to the dialing of a digit. The current in the calling line loop is interrupted as many times as there are units in the digit dialed. That is, dialing of the digit 7, for example, generates 7 dial pulses (interruptions in current flowing through the loop of the calling telephone).

DIAL PULSE SPRINGS.

Pair of normally closed springs of a dial assembly, which is opened and closed by the pulse cam a number of times corresponding to the digit dialed.

DIAL SHUNT SPRINGS.

Set of contact springs of a dial assembly which operate and shunt the receiver and transmitter of a dial telephone set whenever the dial is off normal (operated). Shunting of the receiver prevents pulse clicks from being heard in the receiver during dialing. Shunting of the transmitter prevents its variable resistance from affecting the pulses generated in the calling line loop.

DIAL SPEED AND PULSE RATIO TEST CIRCUIT.

Test circuit, or component, of a test desk.

DIAL SPEED AND PULSE RATIO TEST SET.

Portable test set or a component of a test desk used to check the pulse speed and pulse ratio (percent make) of dials of dial telephone sets. A milliammeter on the front panel of the test set has two scales, one scale for registering dial pulse speeds in pulses per second, another scale for registering pulse ratios.

DIAL SPEED INDICATOR.

Portable dial speed test set or a component of a desk used to measure the pulse speed of dials.

DIAL SPEED TEST UNIT.

Unit used to measure dial speed at pulses per second.

DIAL SYSTEM A-BOARD.

(Reference: SWITCHBOARD.)

DIAL TELEPHONE.

Type of calling device which, when wound up and released, generates pulses required for establishing connections.

DIAL TELEPHONE SET.

Telephone set equipped with a dial.

DIAL TELEPHONE SYSTEM.

Telephone system in which telephone connections between customers are ordinarily established by electronic and mechanical apparatus, controlled by manipulations of dials by the calling parties.

DIAL TONE.

Tone employed in a dial telephone system to indicate that the equipment is ready for the dialing operation.

DIAL TRAIN OF A METER.

Gear wheels and pinions used to interconnect the dial pointers.

DIALING.

To make connections with, by means of a dial; to manipulate a dial.

COMPOSITE. Method of dialing between distant offices over one leg of a composite set.

LOOP. Return-path method of dialing in which the dial pulses are sent out over one side of the interconnecting line or trunk and are returned over the other side; limited to short-haul traffic.

POSITION. Dialing over the regular position cord circuits by means of a relay circuit under control of a dial of the regular cord circuits.

SIMPLEX. Method of dialing over the simplex leg of a phantom group.

VOICE FREQUENCY. Method of dialing by which the direct current pulses from the dial are transformed into voice-frequency, ac pulses. Used in long-haul intertoll dialing.

DIALING CORD.

Method of dialing by which the operator's dial is connected to the outgoing line of trunk by means of a cord.

DIALING KEY.

Method of dialing in which a set of numerical keys is used to originate dial pulses instead of a dial. Generally used in connection with voice-frequency dialing.

DIALYTE.

Type of duplex lens in which the inner surfaces of the two elements of each half of the system are ground to different curvatures to correct for aberrations. The dissimilar faces cannot be cemented together.

DIAM (DIAMETER).

Any chord passing through the center of a figure or body.

DIAMAGNETIC.

Magnetic permeability less than one and hence less than that of a vacuum. Examples are Bismuth and Antimony.

DIAMAGNETIC MATERIAL.

Material having a permeability less than that of a vacuum.

DIAMOND ANTENNA.

Horizontal rhombic antenna having four conductors forming a diamond pattern or rhombus.

DIAPHRAGM.

1. Thin, flexible membrane used in various electroacoustic transducers to produce AF vibrations when actuated by electric impulses or actuated by AF vibrations to control the production of electric impulses.

2. Electrolytic porous or permeable membrane, usually flexible, separating anode and cathode compartments.

3. Waveguide plate (or plates) placed transversely across the waveguide, not completely closing it, and usually introducing a reactive impedance.

DIAPHRAGM RING FILTER.

Waveguide filter in the form of an annular slot in a diaphragm.

DIAPHRAGMLESS MICROPHONE.

Microphone having no mechanical vibrating system. Instead, sound waves act directly on a frame, an arc, a glow discharge, or the ionized space between a Nernst glower and a cold electrode.

DIATHERMY.

Therapeutic use of HF current to generate heat within some part of the body.

DICHROISM.

Property of showing different colors when viewed in different directions.

DICHROMATISM.

Form of night blindness.

DICING.

Process in which a crystal wafer is sawed into blanks.

DICKE FIX.

Classified definition. (Reference: AFM 100-50.)

DICTAPHONE RECEPTION.

Recording of high-speed, radiotelegraph signals with a dictaphone or phonograph, which afterward can be run slower for reading or copying the message.

DID (DIGITAL INFORMATION DISPLAY).

SAGE presentation of digital information in tubular form on the face of a digital-information-display tube.

DIE CASTING.

Casting of alloys in metal moulds or dies. There are pressure and gravity die casting, according to whether the metal is forced into the die.

DIELECTRIC.

Term applied to the insulating material between the plates of a capacitor. Air, paper, mica and oil are dielectrics.

DIELECTRIC ABSORPTION.

Property of imperfect dielectric whereby all electric charges within the body of the material caused by an electric field are not returned to the field.

DIELECTRIC ANTENNA.

Antenna which employs dielectric as the major component in producing the required radiation.

DIELECTRIC CONSTANT.

Property of a dielectric material that determines how much electrostatic energy can be stored per unit volume when unit voltage is applied. In effect, it is the ratio of the capacitance of a capacitor filled with a given dielectric to that of the same capacitor having only a vacuum as dielectric. (Reference: PERMITTIVITY, SPECIFIC INDUCTIVE CAPACITANCE.)

DIELECTRIC CURRENT.

1. Current flowing at any instant through any surface in an isotropic dielectric which is in a changing electric field.
2. Absorption current.
3. Decaying conduction current.

DIELECTRIC FATIGUE.

Property of some dielectrics in which its insulating quality decreases after a voltage has been applied for a considerable time.

DIELECTRIC GUIDE.

Class of waveguides consisting of a dielectric cylinder surrounded by air. It is capable of propagating electromagnetic waves through its interior in much the same way as sound waves travel through a speaking tube.

DIELECTRIC HEATING.

Use of RF energy to heat nonmetallic materials such as wood, plastics, or chemicals by causing them to act as a dielectric. The heat is produced by molecular friction.

DIELECTRIC HYSTERESIS.

Lagging of the electric field produced by application of an alternating voltage to a dielectric. It causes a dielectric hysteresis loss analogous to that of magnetic hysteresis.

DIELECTRIC LOSS.

Time rate at which electric energy is transformed into heat in a dielectric when it is subjected to a changing electric field.

DIELECTRIC LOSS ANGLE.

Difference between 90 degrees and the dielectric phase angle.

DIELECTRIC LOSS FACTOR.

Product of the dielectric constant of a material and the tangent of its dielectric loss angle.

DIELECTRIC MATCHING PLATE.

Waveguide dielectric plate used as an impedance transformer for matching purposes.

DIELECTRIC PHASE ANGLE.

Angular difference in phase between the sinusoidal alternating potential difference applied to a dielectric and the component of the resulting alternating current having the same period as the potential difference.

DIELECTRIC POWER FACTOR.

Cosine of the dielectric phase angle or sine of the dielectric loss angle.

DIELECTRIC SEPARATOR.

Apparatus for separating minerals from other materials on the basis of differences in the dielectric constants of the materials to be separated.

DIELECTRIC STRENGTH.

Maximum potential gradient that a dielectric material can withstand without rupturing. The value obtained for the dielectric strength will depend on the thickness of the material and on the method and conditions of test.

DIELECTRIC SUSCEPTIBILITY.

Polarization in a material per unit electric intensity. When k is dielectric susceptibility and K is the dielectric constant, $k = (K-1)/4$.

DIELECTRIC TESTS.

Tests which consist of the application of a voltage higher than the rated voltage for a specified time for the purpose of determining the adequacy against breakdown of insulating materials and spacings under normal conditions.

DIELECTRIC WIRE.

Waveguide consisting of a solid dielectric rod of the desired length, made of an insulating material. Used for transmission of radio waves over short distances between parts of a circuit at ultra-high frequencies.

DIESEL.

Internal-combustion engine differing from other internal-combustion engines in that its compression is high enough to cause combustion to be spontaneous.

DIESEL CYCLE.

Cycle of events which occur in diesel engines similar to gasoline (Otto cycle) engines except that air without fuel is compressed to a high pressure. At the end of the compression stroke, fuel is injected into the hot compressed air and it burns immediately.

DIESEL-ELECTRIC DRIVE.

Self-contained system of power conversion in which a diesel engine operates an electric generator that develops and supplies power to an electric driving motor.

DIFFERENCE IN DEPTH MODULATION.

In directive systems employing overlapping lobes as modulating signals, a fraction obtained by subtracting from the percentage of modulation of the larger signal, the percentage of modulation of the smaller signal, and dividing by 100.

DIFFERENCE OF POTENTIAL.

Voltage between two points.

DIFFERENTIAL.

Pertaining to, or involving, a difference; for example, a differential current device is one which operates upon the basis of a difference in two current values.

DIFFERENTIAL AMPLIFIER.

Amplifier having two similar input circuits connected so as to respond to the difference between two voltages or currents and effectively suppress voltages or currents which are alike in the two input circuits.

DIFFERENTIAL ANALYZER.

Electromechanical mathematical computer for solving linear and nonlinear problems.

DIFFERENTIAL DUPLEX SYSTEM.

System in which the sent currents divide through two mutually inductive sections of a receiving apparatus, connected respectively to the line and to a balancing artificial line in opposite directions, so that there is substantially no net effect on the receiving apparatus. The received currents pass mainly through one section, or through the two sections in the same direction, and operate the apparatus.

DIFFERENTIAL GAIN CONTROL.

Device for altering the gain of a radio receiver in accordance with expected change of signal level, in order to reduce the amplitude differential between the signals at the output of the receiver.

DIFFERENTIAL GALVANOMETER.

Galvanometer having two similar but opposed coils with currents that tend to neutralize each other. A zero reading is obtained when the currents are equal.

DIFFERENTIAL INSTRUMENT.

Galvanometer or other measuring instrument having two circuits or coils, usually identical, through which currents flow in opposite directions. The difference or differential effect of these currents actuates the indicating pointer.

DIFFERENTIAL MICROPHONE.

Double-button carbon microphone. Extra sensitivity is obtained by using two carbon elements, one on each side of the diaphragm, so that a decrease in resistance of one button is accompanied by an increase in resistance of the other button.

DIFFERENTIAL PERMEABILITY.

Ratio of the positive increase of normal induction to the positive increase of magnetizing force when these increases are vanishingly small.

DIFFERENTIAL PROTECTION.

Effect of a device operative on a difference between electrical quantities in excess of a predetermined amount of ratio to cause and maintain the interruption of power in the circuit.

DIFFERENTIAL RELAY.

1. Relay that functions by reason of the difference between two quantities of the same nature, such as two currents or two voltages.
2. Relay with two windings which assist or oppose each other in moving the armature.

DIFFERENTIAL SELSYN.

Selsyn in which both rotor and stator have similar windings that are spread 120° apart. The position of the rotor corresponds to the algebraic sum of the fields produced by the stator and rotor

DIFFERENTIAL SHRINKAGE.

Difference in unit contraction along the grain structure of the material as compared to the unit contraction across the grain structure; frequently applied to photographic film and papers and to mapping in general.

DIFFERENTIAL SYNCHRO.

(Reference: SYNCHRO DIFFERENTIAL GENERATOR, SYNCHRO DIFFERENTIAL MOTOR.)

DIFFERENTIAL WINDING.

Coil winding arranged so that its magnetic field, and hence its effect, is opposite to that of a nearby coil.

DIFFERENTIAL WOUND FIELD.

Type of motor or generator field having both series and shunt coils that are connected to oppose each other.

DIFFERENTIATING CIRCUIT.

Circuit which produces an output voltage substantially in proportion to the rate of change of the input voltage or current. Differentiating circuits employ time constants that are short compared to the duration of the pulse applied, thus differentiating the input pulse.

DIFFERENTIATOR.

1. Electronic computer device, usually of the analog type, whose output is proportional to the derivative of an input signal.
2. Transducer whose output wave form is substantially the time derivative of its input wave

form. Such a transducer preceding a frequency modulator makes the combination a phase modulator; or, following a phase detector, makes the combination a frequency detector. Its ratio of output amplitude to input amplitude is proportional to frequency and its output phase leads its input phase by 90° .

DIFFERENTIATOR CIRCUIT.

Circuit which produces an output voltage substantially in proportion to the rate of change of the input voltage or current. Differentiating circuits employ short time constants compared to the time duration of the pulse applied.

DIFFRACTED WAVE.

When a wave in a medium of certain propagation characteristics is incident upon a discontinuity or a second medium, the diffracted wave is the wave component that results in the first medium in addition to the incident wave and the waves corresponding to the reflected rays of geometrical optics.

DIFFRACTION.

Effect produced when waves (light, sound, or radio) encounter a barrier and bend around it.

DIFFRACTION ANGLE.

Angle between the direction of an incident beam of light and any resulting diffracted beam.

DIFFRACTION GRATING.

Screen having 1,000 to 50,000 lines per inch on a polished metal or glass surface, used to produce a spectrum by interference between colors of light passing through or reflected by the grating.

DIFFUSE.

In all directions, not in any sharply defined path. Applicable to reflection, refraction, or transmission of light and other waves.

DIFFUSE REFLECTION.

Type of reflection obtained from a relatively rough surface in which the reflected rays are scattered in all directions.

DIFFUSE REFLECTOR.

Reflector or mosaic of reflectors that scatter incident radiation in all directions.

DIFFUSED SOUND.

Sound is said to be in a perfectly diffused state when in the region considered, the energy density, averaged over portions of the region compared to the wavelength, is uniform and when all directions of energy flux at all parts of the region are equally probable.

DIFFUSING SURFACES AND MEDIA.

Surfaces which break up the incident light and distribute it more or less in accordance with the cosine law, as, for example, rough plaster and opal glass.

DIFFUSION.

Scattering of radiation by reflection or transmission. Diffused reflection results when light strikes an irregular surface such as a frosted window or the surface of a frosted or coated light bulb. When light is diffused, no definite image is formed.

DIFFUSION PUMP.

Type of vacuum pump in which mercury vapor or other heavy molecules in a stream or jet carry gas molecules before them. Mercury vapor diffusion pumps are extensively used in producing high vacuums in vacuum tubes.

DIG (DELIVERY INDICATING GROUP).

Delivery group which, while indicating a specific set of addressees may also indicate the identity of the originator and show which addressees are action or information.

DIG-IN ANGLE.

Stylus cutting angle such that the point is driving into the coating. It is the opposite of drag angle.

DIGIT.

1. One of the successive series of pulses incoming from a dial to operate a switching train. (Reference: POSITIONAL NOTATION.)

DIGITAC.

Airborne digital computer developed by Hughes Aircraft Co. It was designed for use in tactical bombing and navigation. Although Digitac itself never went into production it served as a proto-

type for further development of airborne digital computers. One digital computer will perform all the functions which require individual analog computers, such as fire control, navigation, and automatic flight control. Digital computers will also handle new or different problems without major internal change.

DIGITAL COMPUTER.

Computer in which quantities are represented in numerical form and which generally is made to solve complex mathematical problems by iterative use of the fundamental processes of addition, subtraction, multiplication, and division.

DIGITAL DATA.

Information expressed in numerical values based upon some particular base numbering system.

DIGITAL DATA RECEIVER.

Device for accepting digital signals in audio form from a data circuit and for presenting these signals in pulse form to digital equipment.

DIGITAL DATA TRANSMITTER.

Device for transmitting digital signals in pulse form and presenting these signals in audio form to digital equipment.

DIGITAL INFORMATION DISPLAY.

Presentation of digital information in tubular form on the face of a digital-information-display tube.

DIGITAL INFORMATION DISPLAY TUBE.

Small cathode-ray tube on which digital information is displayed.

DIGITALIZED DATA.

Data presented in a number of digit forms for electrical transmission. This data includes output information from electronic data processing equipment (EDPE), high speed data transmission terminals, digital computers, data transceivers, magnetic tape, punched card readers, teletype and digitalized facsimile, and voice equipment.

DIHEPTAL BASE.

Vacuum tube base having 14-pin sockets, used for cathode-ray tubes.

DIMMER.

Control for varying the intensity of illumination on pilot, scale, or dial lights.

DINA.

Airborne radar jamming transmitter, AN/APT-1. It operates in the 92-210 MC band with an output of 30 watts, and weighs 70 pounds. Energy radiated is noise, contained in one sideband. The carrier and other sideband are suppressed. This set is similar to the Navy AN/SPT-1 equipment. It is used on spot or barrage jamming.

DIODE.

Vacuum tube with two electrodes, a cathode and a plate; used principally as: (1) detector and as (2) rectifier for converting alternating currents to pulsating currents.

DIODE CLIPPER.

Two element vacuum tube which can be adjusted to remove any unwanted portion, positive or negative, of a signal by biasing. (Reference: CLIPPER.)

DIODE DETECTOR.

Diode used in a demodulation circuit. Detection may be half or full wave rectification.

DIODE LIMITER.

Peak limiting circuit employing a diode that becomes conductive when signals peaks exceed a predetermined value.

DIODE MIXER.

Diode in an RF line which mixes incoming radio frequency and local oscillator signals to produce an intermediate frequency. (Reference: MIXER.)

DIODE PEAK DETECTOR.

Diode used in a circuit to indicate when audio peaks at the transmitter exceed a predetermined value.

DIODE RECTIFICATION.

Half-wave rectification by means of a diode which depends on the fact that a diode passes current in one direction only.

DIODE SWITCH.

Diode which is made to act as a switch by the successive application of positive and negative

biasing voltages to the anode (relative to the cathode). This allows or prevents, respectively, the passage of other applied wave forms within certain limits of voltage.

DIODE-PENTODE.

Vacuum tube having a diode and a pentode in the same envelope.

DIODE-TRIODE.

Vacuum tube having a diode and a triode in the same envelope.

DIOPTER.

Unit of optical measurement which expresses the refractive power of a lens or prism.

DIOPTER MOVEMENT

Term applied to adjustment of the eyepiece of an instrument to provide accommodation for eyesight variations of individual observers.

DIOPTER SCALE.

Scale usually found on the focusing nut of the eyepiece of an optical instrument. It measures the change in refracting power of the eyepiece in diopters to introduce a correction to compensate for the nearsightedness or farsightedness of the individual observer. It permits presetting of the instrument if the observer knows his diopter correction.

DIPLEX OPERATION.

Simultaneous transmission or reception of two signals using a specified common feature, such as a single antenna or a single carrier.

DIPLEX TRANSMISSION.

Simultaneous transmission of two signals by means of some common feature, such as a single carrier or a single antenna.

DIPLEXER.

1. Coupling system which allows a radar and a communications transmitter to utilize simultaneously or alternately the same antenna.
2. Coupling unit in radio which allows more than one transmitter to operate together on the same antenna.

DIPOLE.

Molecule in which the centroid (effective center) of the positive charges is at a different point from the centroid of the negative charges.

DIPOLE ANTENNA.

Straight radiator, usually fed to the center, and producing a maximum of radiation in the plane normal to its axis.

DIPOLE DISK FEED.

Antenna consisting of a dipole near a disk, which is used to reflect energy to the disk.

DIRECT COMPONENT OF CURRENT.

Drift of electrons in one direction while current is flowing, whether or not there are reversals of the direction of electron flow at regular intervals during the period of current flow.

DIRECT COMPONENT OF VOLTAGE.

Portion of a pulsating voltage which is responsible for the drift of electrons in one direction while the pulsating voltage is applied to a conductor.

DIRECT COUPLING.

1. Association of two or more circuits by means of a self-inductance, capacitance, resistance or a combination of these which is common to the circuits.

2. That type of interconnection between tubes in amplifiers or other electronic equipment wherein the plate of the preceding tube is connected directly to the grid of the following tube.

DIRECT CURRENT.

Unidirectional electric current flowing through a circuit in one direction, and essentially constant in magnitude.

DIRECT CURRENT AMPLIFIER.

Amplifier capable of amplifying dc voltages. It generally employs between stages either resistive coupling alone or resistive coupling combined with other forms of coupling.

DIRECT DISTANCE DIALING.

Method of making toll calls under which the

call can be dialed directly without the services of a telephone company operator.

DIRECT DRIVER.

Direct shaft-to-shaft connection between the driving and driven parts of a rotating system, avoiding the use of belts and pulleys.

DIRECT ELECTROMOTIVE FORCE.

Unidirectional electromotive force in which the changes in values are either zero or so small that they may be neglected.

DIRECT FEEDER.

Feeder which connects a generating station, substation, or other supply point to one point of utilization.

DIRECT GRID BIAS.

Direct component of grid voltage; commonly called grid bias.

DIRECT INDUCTIVE COUPLING.

Association or linking of one circuit with another by means of inductance that is common to both circuits. Often obtained by connecting one circuit directly to a tap on a coil in another circuit.

DIRECT MANUAL CONTROL.

Arrangement of controls in which the control handles are directly attached to their switching devices.

DIRECT OPERATION.

Operation by means of a mechanism connected directly to the main operating shaft, or an extension of it.

DIRECT PIEZOELECTRICITY.

Name sometimes given to the piezoelectric effect in which an electric charge is developed on a crystal by the application of mechanical stress.

DIRECT POINT.

Device which receives signals over a line and repeats corresponding signals directly into another line or lines without the interposition of any other repeating or transmitting apparatus.

DIRECT RECORDING.

Facsimile recording where the record sheet is usable without further processing. Examples of direct recording are barbon pressure, electrolytic, Stenafax, Timefax, and Teledeltos.

DIRECT RESISTANCE-COUPLED AMPLIFIER.

Amplifier in which the plate of one stage is connected either directly or through a resistor to the control grid of the next stage, with the plate load resistor being common to both stages. Used to amplify small changes in direct current.

DIRECT RHOMBOHEDRON.

Identical with the major r (1010) rhombohedron of a crystal.

DIRECT SCANNING.

Scanning method in which the subject is illuminated at all times and only one elemental area of the subject is viewed at a time by the television camera.

DIRECT VOLTAGE.

Voltage that forces electrons to move through a circuit in the same direction continuously, thereby producing a direct current.

DIRECT WAVE.

1. Wave that travels directly between the transmitter and receiver without reflections from any object.
2. Wave that is propagated directly through space.

DIRECT-ACTING RECORDING INSTRUMENT.

Recording instrument in which the working device is mechanically connected to, and directly operated by, the moving element.

DIRECT-ARC FURNACE.

Furnace in which the heat-producing arc is formed between the electrodes and the charge.

DIRECT-CURRENT BALANCER.

Machine which comprises two or more similar dc machines connected in series across the outer conductors of a multiple-wire system of distribution, for the purpose of maintaining the potentials of the intermediate conductors of the system which are connected to the junction points between the machines.

DIRECT-CURRENT COMMUTATING MACHINE.

Rotating machine which consists of a magnetic field excited from a dc source (or formed of permanent magnets), an armature, and a com-

mutator. Specified types of dc commutating machines are: generators, motors, synchronous converters, boosters, balancers, and dynamotors.

DIRECT-CURRENT CONDUCTANCE.

Conductance for an unvarying potential difference (usually called single conductance). Direct-current conductance is the reciprocal of dc resistance.

DIRECT-CURRENT DISTRIBUTION.

Supply to points of utilization of electric energy by direct current from its point of generation or conversion.

DIRECT-CURRENT ERASING HEAD.

Magnetic recording head which uses direct current to produce the magnetic field necessary for erasing. Dc erasing is achieved by subjecting the medium to an unidirectional field. Such a medium is, therefore, in a different magnetic stage than one erased by alternating current.

DIRECT-CURRENT QUADRUPLIX SYSTEM.

Dc telegraph system which affords simultaneous transmission of two messages in each direction over the same line, operating by superposing neutral telegraph upon polar telegraph.

DIRECT-CURRENT RESISTANCE.

Circuit resistance to an unvarying current.

DIRECT-CURRENT RESTORER.

Means, used in a circuit incapable of transmitting slow variations but capable of transmitting components of higher frequency, by which a dc or low frequency component is reinserted after transmission. (Reference: CIRCUIT, CLAMPING.)

DIRECT-CURRENT TELEGRAPHY.

Form of telegraphy in which, to form the transmitted signals, direct current is supplied to the line under the control of the transmitting apparatus.

DIRECT-CURRENT TRANSMISSION.

Transfer of electrical energy by direct current from its source to one or more main receiving stations.

DIRECT-RELATION TELEMETER.

Telemeter in which the translating means (voltage, current, frequency, etc.) increases in value with an increase in the measured quantity.

DIRECT-WIRE CIRCUIT.

In a supervised protective signaling circuit usually consisting of one metallic conductor and a ground return and having signal-receiving equipment responsive to either an increase or a decrease in current.

DIRECTED NET.

Net in which no station other than the net control station may communicate with any other station, except for the transmission of urgent messages, without first obtaining the permission of the net control station.

DIRECTION.

Position of one point in space relative to another, without reference to the distance between them; may be either three-dimensional or two-dimensional. Direction is not an angle, but is often indicated in terms of its angular distance from a reference direction.

DIRECTION CENTER.

Physical facility of an air defense sector headquarters from which active air-defense functions are directed. The direction center is equipped with an AN/FSQ-7 Combat Direction Central.

DIRECTION CENTER ACTIVE.

Complete direction center computer program which directs the computer in the performance of air-defense functions.

DIRECTION FINDER.

Radio aid to navigation which determines the direction of arrival of a radio signal by measuring the orientation of the wavefront or of the magnetic or electric vector of a radio wave. Direction finding sets can be combined into nets to provide a fix on a transmitted signal. In addition to purely navigational functions, such sets can be used for SAR and balloon tracking purposes.

DIRECTION FINDER BEARING INDICATOR.

Instrument which is used with an airborne radio direction finder to indicate the relative, magnetic, or true bearing of a station from an aircraft, or the reciprocal of this bearing. A direction-finder bearing indicator of the manual type is known as an MDF bearing indicator, and one of the automatic type is known as an ADF bearing indicator.

DIRECTION OF INDUCED CURRENT.

Current induced in a conductor as a result of the conductor's motion in a magnetic field in such a direction as to exert a mechanical force opposing the motion.

DIRECTION OF LAY.

Lateral direction in which the strands of a cable run over the top of the cable as they recede from an observer looking along the axis of the cable.

DIRECTION OF POLARIZATION.

1. Direction of electrical lines of force.
2. For a mode possessing at any cross section two, and only two, axes of symmetry or antisymmetry at right angles, the direction of polarization is the direction of the electric field at, or limitingly near to, the intersection of the axes.
3. In a linearly polarized wave, the direction of the displacement vector. In an electromagnetic wave, the direction of the electric displacement is taken as the direction of polarization.

DIRECTION OF PROPAGATION.

Point in a homogeneous isotropic medium where the direction of propagation is the normal to an equiphase surface taken in the direction of increasing phase lag.

DIRECTION RECTIFIER.

Rectifier which supplies a dc voltage varying in magnitude and polarity with the magnitude and relative polarity of an ac selsyn error voltage.

DIRECTION-FINDER DEVIATION.

Sum of the systematic and random angular difference between the indicated bearing and the correct bearing caused by characteristics of the receiving aircraft or station.

DIRECTION-FINDING RECEIVERS.

Receivers used in conjunction with radio direction finders. (Reference: DIRECTION FINDER.)

DIRECTION-FINDING STATION.

Shore radio station having equipment for determining the direction of arrival of radio waves from ships or aircraft.

DIRECTIONAL ANTENNA.

Antenna which radiates or receives radio waves more effectively in some directions than others. The term is usually applied to antennas whose directivity is larger than that of a half-wave dipole.

DIRECTIONAL CHARACTERISTIC.

Expression of the behavior of an antenna or electroacoustic transducer with respect to direction.

DIRECTIONAL CONTROL.

Qualifying term applied to a protective relay or relay scheme which indicates a means for preventing the protective relay or scheme from functioning until the power is in a predetermined direction.

DIRECTIONAL COUPLER.

1. Coupling between a waveguide and another waveguide or external circuit in such manner that the direction of energy flow in the latter is related to the direction of energy flow in the former.

2. Device used to extract a portion of the RF energy moving in a given direction in a transmission line. Energy moving in the opposite direction is rejected. (Reference: DIRECTIVE FEED.)

DIRECTIONAL FILTERS.

In some carrier systems a particular range of frequency is used for east to west paths, and a certain other range for west to east paths. The filters provided to separate these two frequency ranges are known as directional filters, or directional separation filters. Directional filters may be conventional low-pass, high-pass, or band-pass filters, the "directional" appellation indicating only the usage.

DIRECTIONAL FLOODLIGHT SYSTEM.

Landing-area floodlight system so operated that aircraft land essentially parallel with the direction of the rays.

DIRECTIONAL HOMING.

Procedure of following a path in which the objective is maintained at a constant relative bearing.

DIRECTIONAL MICROPHONE.

Microphone with a response designed to vary with the direction of sound incidence.

DIRECTIONAL OVERCURRENT PROTECTION.

Effect of a device, operative on a current in excess of a predetermined amount and in a predetermined direction, to cause and maintain an interruption of power in the circuit.

DIRECTIONAL PATTERN (RADIATION PATTERN).

Graphical representation of the radiation intensity or reception gain of an antenna as a function of direction. Cross sections, in which directional patterns are frequently given, are the vertical and horizontal planes, or the principal electric and magnetic polarization planes.

DIRECTIONAL RECEPTION.

Method of reception capable of accepting or rejecting signals received from a given direction or directions.

DIRECTIONAL RELAY.

Relay which functions in conformance with the direction of power, voltage, current, pulse, rotation, etc.

DIRECTIONAL SEPARATION FILTERS.

In many carrier systems, a certain range of frequency is used for east to west paths, and a certain other range for west to east paths. The filters provided to separate these two frequency ranges are known as directional filters, or directional separation filters.

DIRECTIVE.

1. Military communication in which a policy is established or a specific action is ordered.

2. Plan issued with a view to placing it in effect when so directed, or in the event that a stated contingency arises.

3. Broadly speaking, any communication which initiates or governs action, conduct, or procedure.

DIRECTIVE FEED.

Device used to extract a portion of the RF energy moving in a given direction in a transmission line. Energy moving in the opposite direction is rejected. (Reference: DIRECTIONAL COUPLER.)

DIRECTIVE GAIN.

The ratio of the radiation intensity in a given direction to the power radiated in the same direction by a standard antenna with the input power kept constant. In a given direction, it is 4 times the ratio of the radiation intensity in that direction to the total power radiated by the antenna.

DIRECTIVITY.

1. Characteristic of an antenna which makes it radiate or receive more energy in some directions than in others.
2. Value of the directive gain of an antenna in the direction of its maximum value.

DIRECTIVITY ANGLE.

Elevation angle of the optimum radius vector of a directive diagram.

DIRECTIVE FACTOR.

Directivity factor of a directional transducer in any direction is the ratio of the power received or delivered by the transducer in that direction, to the power in the direction of maximum response.

DIRECTIVITY INDEX.

Defined as $10 \log D$, where D is the directivity factor.

DIRECTLY HEATED CATHODE.

Filament cathode which carries its own heating current for electron emission, as distinguished from an indirectly heated cathode.

DIRECTOR.

1. Parasitic antenna element located in the general direction of the major lobe of radiation for the purpose of increasing radiation in that direction.

2. Telephone switch which translates the digits dialed into the directing digits actually used to switch the call.

FIGHTER. Officer on the staff of a tactical air director responsible for direction of such air warning facilities and aircraft as may be allocated to him for the defense of his area. (Reference: AIR CONTROLLER.)

SENIOR. Officer who is responsible for the operation of an air defense direction center, and for the conduct of air defense within a subsector.

TRAFFIC. Radar controller proficient in the identification and directing of aircraft in a desired traffic pattern, and proficient in maintaining suitable separation between aircraft and aircraft tracks so as to allow an expeditious flow of air at all times.

DIRECTOR ELEMENT.

Undriven element on an antenna so situated with respect to its associated driven element that the direction of maximum radiation from the radiating element is toward the director element.

DIRECTOR (DEPUTY) OPERATIONS.

Member of the battle staff responsible for supervision of air-defense operations within the organization area of responsibility.

DIRECTORY NUMBER.

Full complement of digits required to designate a subscriber in the directory. In a 5, 6, or 7-digit exchange area, the directory number consists of office code followed by four numerals. In some areas a station letter, to control selective ringing, follows the four numerals and is considered part of the number.

DirPacALDocks (DIRECTOR PACIFIC AND ALASKAN DIVISION, BUREAU OF YARDS AND DOCKS).

DISCERNIBLE DIFFERENCE OF CONVERGENCE ANGLES.

Differences in the angles of view from the two eyes to objects or parts of objects.

DISCHARGE.

Release of stored-up electricity. In a storage battery, the conversion of the chemical energy of the battery into electric energy.

DISCHARGE CIRCUIT OF SURGE GENERATOR.

Portion of a surge generator connection in which exists the current and voltage variations constituting the generated surge.

DISCHARGE CURRENT OF LIGHTNING ARRESTOR.

Surge current which flows through the arrestor upon application of a lightning or test surge to its terminals.

DISCHARGE KEY.

Device for switching a capacitor suddenly from a charging circuit to a load through which it can discharge.

DISCHARGE LAMP.

Lamp in which light is produced by the luminescence of a gas or vapor at low pressure, through which an electric discharge is passed between suitable electrodes. Fluorescent materials are sometimes used on the inner surface of the glass envelope to increase the illumination, as in ordinary fluorescent lamps.

DISCHARGE TUBE.

Evacuated inclosure containing a gas at low pressure which permits the passage of electricity through the gas upon application of sufficient voltages. The tube is usually provided with metal electrodes, but one form permits an electrodeless discharge with induced voltage.

DISCHARGING CURRENT.

1. Correct rate at which a particular battery should be discharged.
2. Current provided by a battery during discharge.
3. Current obtained by discharging a capacitor.

DISCONNECT SIGNAL.

Signal transmitted from one end of a subscriber line or trunk to indicate at the other end that the established connection should be released.

DISCONNECTING SWITCH.

Form of air switch used for changing connections in a circuit or system, or for isolating purposes.

DISCONNECTOR RELEASE.

Disengage apparatus used in a telephone connection to restore it to its condition when not in use.

DISCONTINUITY.

Abrupt change at a point in the physical relations of electric supply and communication circuits or in electrical constants of either circuit which would materially affect the coupling.

DISCREET ADDRESS SYSTEM.

Ground/air data link under development by the Navy.

DISCRETE SENTENCE INTELLIGIBILITY.

Percentage of the total number of spoken sentences which is correctly understood, when each sentence conveys a simple idea and is of a form to test the observer's acuteness of perception rather than his intelligence.

DISCRETE WORD INTELLIGIBILITY.

Percentage of the total number of spoken words which is correctly understood when the words are spoken so as to have no contextual relation between them.

DISCRIMINATE.

Undisguised system indicator.

DISCRIMINATION.

Difference between the losses, system or transducer, in db at specified frequencies with the system or transducer terminated in specified impedances.

DISCRIMINATOR.

1. Device in which amplitude variations are derived in response to frequency or phase variations.
2. Part of a receiver circuit which removes the desired signal from an incoming FM carrier wave by changing modulations in terms of frequency variation into amplitude variation.

3. Facsimile auxiliary device between the radio receiver and the recorder which converts an audio frequency shift facsimile signal to an amplitude modulated facsimile signal.

4. Circuit, the output voltage of which varies in amplitude and polarity in accordance with the frequency of the applied signal. It is used as a detector in an FM receiver.

DISH.

Reflector the surface of which is concave, as, for example, a part of a sphere or of a paraboloid of revolution. Primarily used as a microwave antenna.

DISINTEGRATION.

Emission of alpha and beta particles by a radioactive atom.

DISINTEGRATION OF FILAMENT.

Burning out of a filament due to normal end of life or to bombardment by heavy ions.

DISINTEGRATION PRODUCT.

Changed substance that remains after loss of alpha particles due to radioactivity.

DISK.

Complete phonograph record or the blank used in a sound recorder.

DISK RECORDING.

Recording made from the reproduction of a recording. (Reference: RERECORDING DUBBING.)

DISPATCH.

Message, usually an official communications, sent from one person to another.

DISPATCHER.

One who dispatches something, as an aircraft dispatcher.

DISPENSER.

Machine which automatically dispenses units of chaff from an aircraft.

DISPENSING.

Act of ejecting chaff.

DISPENSING RATE.

Rate at which chaff is dispensed, measured in units per minute, or per second.

DISPERSION.

1. Separation of a wave into its component frequencies.

2. Scattering of a microwave beam caused by an obstruction.

3. Separation of white light into its component colors.

4. Variation of the refractive index of a substance with the frequency of the light passing through it.

DISPLAY.

Visual presentation of a received signal.

OFF-CENTER PPI. Modified type of PPI presentation in which the sweep origin can be displaced to one side or moved off the face of the cathode-ray tube as a means of expanding the presentation. This action provides better resolution and reduces the area under observation.

OPEN-CENTER. PPI display on which zero range corresponds to a ring around the center of the display.

TYPE B. Type of presentation on a radar indicator in which the signal appears as a bright spot, with bearing as the horizontal coordinate and range as the vertical coordinate. (Reference: RANGE-BEARING DISPLAY.)

TYPE C. Type of presentation on a radar indicator in which the signal appears as a bright spot, with bearing as the horizontal coordinate and elevation angle as the vertical coordinate.

TYPE D. Type of presentation on a radar indicator which combines type B and C displays. The signal appears as a bright spot, with bearing plotted horizontally and elevation and range plotted vertically.

TYPE E. Modification of type B display. The signal appears as a bright spot, with range plotted horizontally and elevation plotted vertically.

TYPE EPI. Expanded position indicator. Displays an expanded sector from PPI presentation.

TYPE F. Type of presentation on an indicator in which a single signal appears as a bright spot. Bearing angle is plotted horizontally and elevation angle is plotted vertically.

TYPE G. Similar to type F display. A single signal appears as a bright spot with wings that grow as distance to the target is diminished. Bearing angle is plotted horizontally and elevation angle is plotted vertically.

TYPE H. Modification of the type B display. The signal appears as a bright line, the slope of which is proportional to the line of the angle of elevation. Bearing is plotted horizontally and range is plotted vertically.

TYPE I. Type of presentation on a radar indicator used to indicate range and direction with a conically scanning antenna. The signal appears as a circular segment with radius proportional to range. Brightest part of the circle indicates direction from axis of cone to the target.

TYPE J. Modification of the type A display. The sweep provides a circular range scale near the circumference of the cathode-ray tube. Signals appear as radial deflections of the sweep. No bearing indication is given.

TYPE K. Modification of the type A display. Employs a double trace with the second trace superimposed and offset for use with lobe-switching radar. Gives range and either bearing or elevation.

TYPE L. Modification of the type A display. Employs a double trace back-to-back for aiming a lobe-switching radar. Gives range and either bearing or elevation.

TYPE M. Modified type A display with a movable step or ditch for accurate range measurement.

TYPE N. Modified type A display. Employs a double trace with a movable step or ditch for accurate range measurement.

TYPE PPI. Type of presentation on a radar indicator in which the signal appears as a bright spot, with range indicated by distance from the center of the screen and bearing by its radial angle.

DISPLAY WINDOW.

Width of the portion of the frequency spectrum presented on panoramic type presentation. Expressed in frequency units, usually megacycles.

DISRUPTIVE DISCHARGE.

Sudden and large increase in current through an insulating medium due to complete failure of the medium under electrostatic stress.

DISSEMINATION.

Classified definition. (Reference: AFM 100-50.)

DISSIPATION.

Waste of energy, as by the production of undesired heat in a circuit.

DISSIPATIVE SYSTEM.

System that does not conserve energy.

DISSOCIATION THEORY.

Theory by which electrolytic conduction is explained by assuming that substances in solution are dissociated into positive and negative ions that travel in opposite directions carrying their respective charges.

DISSONANCE.

1. Formation of maxima and minima by the superposition of two sets of interference fringes from light of two different wave lengths, i.e., what may be called stationary beats or secondary interference.

2. Musical discord.

DISSYMMETRICAL TRANSDUCER.

Transducer, the input and output image impedances of which are unequal in magnitude or phase or both.

DISTANCE.

Range.

DISTANCE MARKING LIGHTS.

Lights indicating distances on the approach path from the threshold lights.

DISTANCE MEASURING EQUIPMENT.

Radio-navigation aid in the aeronautical radio-navigation service that determines the distance of the interrogator from a transponder by measuring the time of transmission to and from the transponder.

DISTANCE OR RANGE MARK.

Mark on a cathode-ray screen which indicates the distance from the radar set to a target.

DISTANCE PROTECTION.

Effect of a device operative within a predetermined electrical distance on the protected circuit to cause and maintain an interruption of power in a faulty circuit.

DISTANCE RELAY.

Protective relay, the operation of which is a function of the distance between the relay and the point of fault.

DISTANT LINE.

Trace of the apparent, or visible, horizon on an oblique photograph used as an approximation to the terrestrial horizon trace when the latter is not identifiable. (Reference: HORIZON.)

DISTILLATION.

Separation of the more volatile parts of a petroleum oil from those less volatile by vaporization and, subsequently, condensation.

DISTORTION.

1. Undesired change in wave form. The principal sources of distortion are: (a) a nonlinear relation between input and output at a given frequency, (b) non-uniform transmission at different frequencies, and (c) phase shift not proportional to frequency. In certain types of electronic equipment wave form distortion is sought to satisfy a desired need, as for instance to produce one frequency from another.

2. Facsimile condition which causes the recorded copy to be other than a perfect reproduction of the transmitted copy.

AMPLITUDE. Distortion occurring in an amplifier or other device when the amplitude of the output is not a linear function of the input amplitude.

AMPLITUDE VS. FREQUENCY. Distortion caused by the nonuniform attenuation or gain of the system, with respect to frequency under specified terminal conditions.

ATTENUATION. Departure, in a circuit or system, from uniform amplification or attenuation over the frequency range required for transmission; the effect of such departure on a transmittal signal.

BIAS. Teletypewriter transmission system uniform lengthening or shortening of the mark or space elements, one at the expense of the other.

CHARACTERISTIC. 1. Displacement of signal transitions resulting from the persistence of transients caused by preceding transitions.

2. Teletypewriter transmission system repetitive displacement or disruption peculiar to specific portions of a signal. There are two types of characteristic distortion; line characteristic distortion and equipment characteristic distortion.

DELAY. Distortion which occurs when the envelope delay of a circuit or system is not constant over the frequency range required for transmission.

DEVIATION. Distortion in an FM receiver due to inadequate bandwidth and inadequate amplitude-modulation rejection or inadequate discriminator linearity.

END. 1. Start-stop teletypewriter shifting of the end of all marking pulses from their proper positions in relation to the beginning of the start pulse.

2. Special type of telegraph signal distortion created for testing purposes. It has the effect of advancing or delaying the end of each marking selecting impulse with respect to the beginning of the character cycles or the initial M-S transition.

EQUIPMENT CHARACTERISTIC. C Teletypewriter transmission repetitive displacement or disruption peculiar to specific portions of a signal; it is normally caused by maladjusted or dirty contacts of the sending or receiving equipment.

FORTUITOUS. Teletypewriter transmission random displacement, splitting, and/or breaking up of the mark and space elements.

FREQUENCY. 1. Distortion which occurs as a result of failure to amplify or attenuate equally all frequencies present in a complex wave.

2. Impairment of fidelity introduced by a transducer as a result of the unequal transfer of frequencies.

GEOMETRIC. Television aberration which causes the reproduced picture to be geometrically dissimilar to the perspective-plane projection of the original scene.

HARMONIC. Production of harmonic frequencies by the non-linearity of a transducer when a sinusoidal voltage is applied to the input. The amplitude of distortion is usually a function of the amplitude of the input signal.

INTERMODULATION. Distortion which results from intermodulation.

KEystone. Distortion produced by scanning in a rectilinear manner, with constant amplitude sawtooth waves, a plane target area which is not normal to the average direction of the beam.

LINE CHARACTERISTIC. Teletypewriter transmission distortion caused when the lengths of the received signal impulses are affected by the presence of changing current transitions in wire circuits.

NON-LINEAR. Distortion which occurs in a system when the ratio of instantaneous voltage to current therein is a function of the magnitude of either.

PHASE. Lack of direct proportionality of phase shift to frequency over the frequency range required for transmission; the effect of such departure on a transmitted signal.

PHASE COEFFICIENT. Difference between the maximum transit time and the minimum transit time for frequencies within a specified band.

QUANTIZATION. Inherent distortion introduced in the process of quantization.

RADIO. Output wave form which is not a true reproduction of the input wave form. Distortion may consist of irregularities in amplitude, frequency, or phase.

SINGLE-HARMONIC. Ratio of the power of the fundamental frequency, measured at the output of the transmission system considered, to the power of any single harmonic observed at the output of the system because of its non-linearity, when a single-frequency signal of specified power is applied to the input of the system; expressed in db.

SYSTEMATIC. Term used to denote the periodic or constant distortion, such as bias or characteristic distortion, and is the direct opposite of fortuitous distortion.

TELETYPEWRITER SIGNAL. Shifting of the transition points of a signal teletypewriter pulses from their proper positions relative to the beginning of the start pulse. The magnitude of the distortion is expressed in percent of a perfect unit pulse length.

TOTAL. Total of all forms of signal distortion is cumulative and is known as the total distortion for that signal.

TOTAL HARMONIC. Ratio of the power at the fundamental frequency, measured at the output of the transmission system considered, to

the power of all harmonics observed at the output of the system because of its non-linearity, when a single-frequency signal of specified power is applied to the input of the system; expressed in db.

DISTORTION FACTOR OF A WAVE.

Ratio of the effective value of the residue after the elimination of the fundamental to the effective value of the original wave.

DISTORTION TRANSMISSION IMPAIRMENT.

Condition where the bandwidth is less than the 2,750 cycles resulting in poorer transmission of intelligence. The degree is expressed in db DTI.

DISTRESS FREQUENCY.

Frequency allotted to distress calls, generally by international agreement. For ships at sea and aircraft over the sea, it is 500 kc.

DISTRIBUTED.

Spread out over an electrically significant length of area.

DISTRIBUTED AREA JAMMING SYSTEM.

Method of dispensing ground-based jammers so that major loads of the airborne radar always point toward a jammer.

DISTRIBUTED CAPACITANCE.

Capacitance that exists between the turns in a coil or choke, or between adjacent conductors or circuits, as distinguished from the capacitance which is concentrated in a capacitor.

DISTRIBUTED CONSTANTS.

Constants such as resistance, inductance, or capacitance that exist along the entire length or area of a circuit, as distinguished from constants concentrated in circuit components.

DISTRIBUTED FLOODLIGHT SYSTEM.

Landing-area floodlight system so operated that the flux from floodlights located a material distance apart is combined to illuminate the area.

DISTRIBUTED INDUCTANCE.

Inductance that exists along the entire length of a conductor, as distinguished from the inductance which is concentrated in a coil.

DISTRIBUTING AMPLIFIER.

Amplifier, either RF or AF, having one input and two or more isolated outputs.

DISTRIBUTING BLOCK.

Set of punchings, set in hard rubber or other insulating material, mounted on a piece of wood. This assembly is rigidly fastened as to a frame and usually wired permanently on one side, permitting wires to be connected and changed on the other. (Reference: TERMINAL BLOCK.)

DISTRIBUTING FRAME.

Structure for terminating permanent wires of a central office, private branch exchange, or private exchange, and for permitting the easy change of connections between them by means of cross-connecting wires.

COMBINED. Frame which vertically mounts the protectors for terminating the outside cable plant and horizontally mounts the terminal blocks for terminating the connector and line-finder banks.

INTERMEDIATE. Frame which mounts terminal blocks on both vertical and horizontal sides for terminating such miscellaneous interoffice cables as those from the relay racks, the attendant's switchboard jacks, and the selector banks.

INTERMEDIATE TRUNK. Frame which mounts the terminal blocks from the line primary switches to the local first selector relays.

DISTRIBUTING TERMINAL ASSEMBLY, SELECTOR.

Frame situated between each pair of selector bays, to provide terminal facilities for the selector bank wiring and facilities for crossconnection to trunks running to succeeding switches.

DISTRIBUTION CABLE.

Cable extending from a feeder cable into a specific area for the purpose of providing service to that area.

DISTRIBUTION CENTER.

1. Agency of the adjutant general for routing correspondence and messages within a large headquarters and the comcenter of the headquarters of echelon.

2. Point at which is located equipment consisting generally of automatic overload protective devices connected to busses, the principal functions of which are subdivision of supply, and control and protection of feeders, subfeeders or branch circuits, or any combination thereof.

DISTRIBUTION SWITCHBOARD.

Power switchboard used for the distribution of electrical energy at the voltage common for each distribution within a building.

DISTRIBUTOR.

Rotating switch used in automotive ignition systems to apply the high voltage of the ignition coil to the spark plugs at correct times and in correct sequence.

TEST AND VERIFICATION. Enables the test desk or attendant operator to seize a line through the test switch train instead of through the regular switch train.

DISTRIBUTOR BOX.

Box or pit through which cables are inserted or removed in a draw-in system of mains. It contains no links, fuses or switches and its usual function is to facilitate tying into a customer's premises.

DISTRIBUTOR DUCT.

Duct installed for use with distribution mains.

DISTURBANCE.

1. Irregular phenomenon associated with transmission which tends to limit or interfere with the interchange of intelligence.

2. Unwanted current which degrades communications by producing noise in the telephone, false signaling, or otherwise interferes with the normal operation of the system.

IONOSPHERIC. Variation in the state of ionization of the ionosphere beyond the normally observed random day-to-day variation from average values for the location, date, and time of day under consideration.

SUDDEN IONOSPHERIC. Sudden decrease in the ion intensity in the lower parts of the ionosphere caused by bright solar eruptions. These cause a sudden increase in the absorption of radio waves propagated throughout the lower parts of the ionosphere. The change usually takes place within a few minutes and generally returns to normal within a few hours.

DIURNAL VARIATION.

Very small variation that occurs daily in the direction of the magnetic north pole.

DIVERGENT BEAM.

Beam consisting of rays that spread out (diverge from a point.)

DIVERSIONARY COUNTERMEASURES.

Classified definition. (Reference: AFM 100-50.)

DIVERSITY.

Method of radio transmission and/or reception whereby, in order to reduce the effects of fading, a single received signal is derived from a combination of, or selection from, a plurality of signals.

FREQUENCY. Method of transmission and/or reception used to minimize the effects of frequency selective fading.

POLARIZATION. Method of transmission and/or reception used to minimize the effects of selective fading of the horizontal and vertical components of a radio signal. It is usually accomplished by the use of separate vertically and horizontally polarized receiving antenna.

SPACE. Method of transmission and/or reception used to minimize the effects of flat fading. It is usually accomplished by multiple antennas physically separated.

DIVERSITY FACTOR.

Ratio of the sum of the individual maximum demands of the various subdivisions of a system or part of a system, to the maximum demand of the whole system, or part under consideration.

DIVERSITY GAIN.

Gain in reception as a result of the use of two or more receiving antennas. Signals induced in

antennas separated by five wavelengths or more fade independently, and better reception is obtainable in the presence of fading by the use of more than one antenna.

DIVERSITY RECEIVER.

Radio receiver which overcomes the effects of fading by automatically selecting the strongest signal impulse from two or more antennas usually separated a considerable distance.

DIVERSITY RECEPTION.

Method of radio reception whereby, in order to minimize the effects of fading, a resultant signal is obtained by combination or selection, or both, of two or more sources of received-signal energy which carry the same modulation or intelligence but which may differ in strength or signal-to-noise ratio at any given instant.

DIVERSITY SYSTEM.

System of radio communication in which a single received signal is derived from a combination of, or selection from, a plurality of transmission channels or paths. The system employed may include space diversity, polarization diversity, or frequency diversity. The diversity principle takes advantage of the fact that fading characteristics of a given signal generally vary widely, at any given instant, at different receiving antenna locations, and with different frequencies.

DIVIDING NETWORK.

Coupling system so arranged that at low audio frequencies, power is delivered to a low-frequency loudspeaker, while at high frequencies it is delivered to a high-frequency loudspeaker. The frequency at which the power delivered to two loudspeakers is equal is termed the crossover frequency.

DIVISION.

1. Army and Marine Corps major administrative and tactical unit which combines in itself the necessary arms and services required for sustained combat, larger than a regiment and smaller than a corps.
2. Number of naval vessels of similar type grouped together for operational and administrative command, or a tactical unit of a naval

aircraft squadron, consisting of two or more sections.

3. Air combat organization normally consisting of two or more wings with appropriate service units. The combat wings of an air division will normally contain similar type units. In air defense a geographical subdivision of a region designated as the area of responsibility of a NORAD division under a SAGE division commander. Its operational facility is a SAGE combat center.

4. Branch or section of the Headquarters or higher unit, that handles military matters of a particular nature, such as personnel, intelligence, plans and training, or supply and evacuation.

5. Number of personnel of a ship's complement grouped together for operational and administrative command.

DME (DISTANCE MEASURING EQUIPMENT).

Radio aid to navigation that determines the distance from a transponder beacon by measuring the time of transmission to and from the beacon.

DO (DEFENSE ORDER).

DOCKS (YARDS AND DOCKS).

DOG HOUSE.

1. Structure placed at the base of a transmitting antenna to house the antenna-tuning equipment.
2. Slang for the protuberance on the outside of a rocket which houses instruments.

DOHERTY AMPLIFIER.

Amplifier circuit in which one vacuum tube supplies the unmodulated carrier current, with its output being reduced to supply negative peaks of modulation, and a second vacuum tube supplies approximately half the positive peaks of modulation and lowers the load impedance of the first vacuum tube so it will supply the other half of the positive peaks. This arrangement gives increased power output and increased efficiency.

DOLLY.

Wheeled truck upon which a television camera is mounted to permit gradual controlled movement of the camera in any desired direction.

DOMESTIC AIR DEFENSE IDENTIFICATION ZONE.

Air defense identification zone within the ConUS.

DOMESTIC COUNT.

Method used for counting the number of words in a domestic telegram. It includes only the words in the text except when the sender makes the address or signature abnormally long.

DOMINANT MODE.

Waveguide transmission mode with the lowest cutoff frequency. Designations for this mode are $TE_{1,0}$, and $TE_{1,1}$ for rectangular and circular waveguides, respectively. (Reference: FUNDAMENTAL MODE.)

DOMINANT STATION.

Standard class I broadcast station operation on a clear channel.

DOMINANT WAVE.

Guided wave which has the lowest cutoff frequency. It is the only wave which will carry energy when the excitation frequency is between the lowest cutoff and the next higher.

DOOR CONTACT.

Electric contacting device attached to a vault door frame operated by opening or closing the door.

DOORKNOB.

Button or acorn-shaped vacuum tube for ultra high frequency application. Tube has no base, the electrodes being brought out through the glass envelope at the sides, top and bottom.

DOORKNOB TUBE.

Doorknob-shaped vacuum tube designed for UHF transmitter circuits, having low electron-transit time and low interelectrode capacitance, because of the close spacing and small size, respectively, of electrodes.

DOPPLER EFFECT.

1. Phenomenon evidenced by the change in the

observed frequency of a wave in a transmission system caused by a time rate of change in the effective length of the path of travel between the source and the point of observation.

2. Change, or apparent change, in a wave length of sound, light, or other radiation when the source and the observer are in motion relative to one another.

DOPPLER RADAR.

Form of radar which detects motion of a distant object by means of the change in radio frequency of the echo signal due to motion.

DOPPLER SHIFT.

Magnitude, in cycles per second, of the change in the observed frequency of a wave caused by the Doppler effect.

DOSAGE.

Term used in radiology; equal to the product of the intensity of the X-rays and the duration of the exposure.

DOSAGE METER.

Instrument designed to estimate the quantity of radiation, so as to determine the duration of exposure when using Roentgen rays for therapy. (Reference: INTENSIMETER.)

DOSE.

Number of units required to achieve a given effect.

DOSIMETER.

Dosage meter.

DOSIMETRY.

Technique of measurement, evaluation, and interpretation of data relative to radiation exposure.

DOT.

Term used in radio telegraphy and is one unit length of signal. When transmitted, a dot will automatically be followed by one unit length of silence.

DOT CYCLE.

Term used in radiotelegraphy and is defined as two unit lengths (one unit length of signal and one unit length of silence).

DOUBLE BOUNCE CALIBRATION.

Method of calibration which is used to determine the zero set error by using round-trip echoes. The correct range is the difference between the first and second echoes.

DOUBLE REFRACTION.

Phenomenon observed in certain crystals, in which light passing through is separated into two components that are polarized at right angles to each other, have different velocities within the crystal, and generally take different directions. These components are termed ordinary and extraordinary rays.

DOUBLE SCREEN.

Three layer screen consisting of a two layer screen with the addition of a second long persistence coating having a different color and different persistence from the first.

DOUBLE SIDEBAND.

Amplitude modulated intelligence which is transmitted at frequencies both above and below the carrier frequency by the audio frequency value of the intelligence.

DOUBLE TRANSPOSITION.

Transposition in which the characters of a first or primary transposition are subjected to a second transposition.

DOUBLE TRIODE.

Vacuum tube having two triodes in the same envelope. (Reference: DUOTRIODE.)

DOUBLE-BREAK SWITCH.

Switch which opens the connected circuit at two points.

DOUBLE-BUTTON CARBON MICROPHONE.

One having two buttons or containers for carbon granules, one on each side of the diaphragm, so as to give twice the resistance change obtainable with a single button.

DOUBLE-CONCAVE LENS.

Lens with two concave surfaces.

DOUBLE-CONVEX LENS.

Lens with two convex surfaces.

DOUBLE-CURRENT GENERATOR.

Machine which supplies both direct and alternating currents from the same armature winding.

DOUBLE-DIODE.

Vacuum tube (or semiconductor) having two diodes in the same envelope. (Reference: DUODIODE.)

DOUBLE-DIODE LIMITER.

Type of limiter which is used to remove all positive signals from a combination of positive and negative pulses, or to remove all the negative signals from such a combination of positive and negative pulses.

DOUBLE-ENDED WIPER.

Wiper arm (contacting arm) of a 25-point rotary stepping switch, which has a wiper at either end. When one wiper end rests on the bank, the other wiper end is off the bank. When one wiper end moves off the bank, the other wiper end moves onto the bank.

DOUBLE-GRID TUBE.

Vacuum tube having two grids.

DOUBLE-LAYER PHOSPHOR.

Phosphor compound consisting of two layers.

DOUBLE-LENGTH NUMBER.

Electronic computer number having twice as many digits as are ordinarily used in a given computer.

DOUBLE-MODING.

Frequency jumping; changing abruptly from one frequency to another at irregular intervals.

DOUBLE-MODULATION.

Method of modulation in which a carrier wave is first modulated with the desired intelligence, and the resulting modulated wave is then used to modulate a second carrier having a higher frequency.

DOUBLE-POLE, DOUBLE-THROW.

Applying to a switch having six terminals and used to connect one pair of terminals to either of two other pairs of terminals.

DOUBLE-POLE, SINGLE-THROW.

Applying to a switch having four terminals and used to connect or disconnect two pairs of terminals simultaneously.

DOUBLE-POLE SWITCH.

Switch that simultaneously changes connections in two separate circuits or in both sides of the same circuit.

DOUBLE-PRECISION NUMBER.

Synonym for double-length number.

DOUBLE-PULSING STATION.

Loran station that receives two pairs and emits pulses at two pulse rates.

DOUBLE-RING STRAPPING.

Use of two ring straps, one being connected to alternate segments and the other to the remaining set of alternate segments of a magnetron.

DOUBLE-SIDEBAND TRANSMISSION.

Method of communication in which all the frequencies produced by the process of modulation, that are symmetrically spaced both above and below the carrier frequency, are transmitted.

DOUBLE-SIDEBAND TRANSMITTER.

Transmitter whose output contains both of the sidebands which result from the modulation of the carrier by the modulating signal. In most instances it also contains a large carrier component.

DOUBLE-SPOT TUNING.

Superheterodyne reception of a given station at two different local oscillator frequency values: (1) With the local oscillator adjusted above the incoming signal frequency by the intermediate-frequency value. (2) With the local oscillator adjusted below the incoming signal frequency by the intermediate-frequency value. (Reference: REPEAT POINT.)

DOUBLE-STUB TUNER.

Impedance-matching device for a transmission line, consisting of two adjustable length stubs spaced a fixed distance apart.

DOUBLE-SUPERHETERODYNE RECEPTION.

Method of reception in which two frequency converters are employed before final detection.

DOUBLE-THROW CIRCUIT BREAKER.

Circuit breaker by means of which a change in the circuit connections can be obtained by closing either of two sets of contacts.

DOUBLE-THROW SWITCH.

Switch by means of which a change in circuit connections can be obtained by closing the switch blade into either of two sets of contacts.

DOUBLE-TUNED AMPLIFIER.

Amplifier of one or more stages in which each stage utilizes coupled circuits having two tuned circuits.

DOUBLE-TUNED CIRCUIT.

Circuit which has two resonant circuits with separate controls.

DOUBLE-VOLTAGE RATING OF A TRANSFORMER.

Rating applied to a transformer which has two separate windings (primary and secondary) with two voltage ratings assigned to each, the turn ratio being the same for both ratings.

DOUBLE-WINDING SYNCHRONOUS GENERATOR.

Synchronous generator which has two similar windings in phase with one another, mounted on the same magnetic structure but not connected electrically, designed to supply power to two independent external circuits.

DOUBLER.

Electronic circuit in which the output is tuned to twice the frequency of the input.

DOUBLET ANTENNA.

Antenna consisting of two elevated conductors substantially in the same straight line and of substantially equal length, with the power delivered at the center.

DOUBLET TRIGGER.

Trigger signal consisting of two pulses spaced by a fixed amount for coding.

DOVE.

Air-to-surface missile developed for the Navy. Nomenclature is XASM-N-4.

DOW OSCILLATOR.

Electron-coupled oscillator circuit.

DOWN LEAD.

Wire that connects an antenna with a transmitter or receiver. (Reference: LEAD-IN.)

DOWNGRADE.

Reduce the security classification of a classified document or an item of classified matter or material.

DOWNWARD MODULATION.

Modulation in which the instantaneous amplitude of a carrier is always less than the unmodulated carrier amplitude.

DN (DEPARTMENT OF THE NAVY).

Executive part of the Navy establishment of the seat of government, including Secretary of the Navy and the supporting staffs.

DP (BY DIRECTION OF THE PRESIDENT).

dpdt (DOUBLE-POLE, DOUBLE-THROW).

Applying to a switch having six terminals and used to connect one pair of terminals to either of two other pairs of terminals.

dpst (DOUBLE-POLE, SINGLE-THROW).

Applying to a switch having four terminals and used to connect or disconnect two pairs of terminals simultaneously.

DR.

ITU designation for directive antenna provided with a reflector.

DR (DEAD RECKON).

Computer action resulting from a manually inserted instruction on a track; this action projects a track for six frames. This is accomplished by logical conclusions based on the assumption of continuity of previously known data. It temporarily prevents a track from being dropped.

DRAFTER.

Person who actually composes a message for release by the originator or the releasing officer. (Reference: ORIGINATOR.)

DRAG ANGLE.

Stylus cutting angle such that the point drags during recording instead of being at 90 degrees to the record surface. It is the opposite of dig-in angle.

DRAG-CUT MOTOR.

Small high-speed two-phase alternating-current electric motor having a two-pole two-phase stator. The rotating element consists only of an extremely light metal cup attached to a shaft rotating on ball bearings. Reversal is accomplished by reversing the connections to one phase. Used in applications requiring quick starting, stopping, and reversal characteristics.

DRAIN, CURRENT.

Current passing through a battery when in use.

DRAIN UNIT.

Battery unit drain per link.

DRAWINGS AND LISTS.

Pictures, sketches, etc., and entrances in the form of catalogues, registers, and the like.

CIRCUIT DRAWING. Representation of the elements of an electrical circuit and its connections by lines and symbols.

CABLE - AND - TRUNK SCHEMATIC. Provides a record of the general trunking scheme and circuitry of the central office's distributing frame, automatic-switching, relay-rack, attendant's switchboard, and local test-desk equipment.

CABLE RACK ASSEMBLY DRAWING. Indicates the layout of the central office cable rack in relation to equipment units and building details.

CABLE RUNNING LIST. Indicates the origin and destination of all central office cable runs, the route of each cable, and the method of forming at each end.

CENTRAL OFFICE KEYSHEET. Tabular listing of all the job drawings and all the manufacturer's drawings applicable to the office involved.

DISTRIBUTING FRAME DRAWING. Indicates the frame assembly of the CDF, the termination of all cable runs on the individual terminal strips, and details of terminating and stripping.

DISTRIBUTING TERMINAL ASSEMBLY DRAWING. Indicates details of the grading scheme and cross-connections to outgoing trunks.

FLOOR PLAN. Definitive guide to the location of all central office equipment.

INSTALLATION PROCEDURES CHART. Provides a guide for determining the sequence and progress of the installation from the preliminary survey of the entire job to the final installation of the last unit.

JOB SCHEDULE. Chart indicating the order of installation procedures in a coordinated manner.

LINEFINDER-TO-FIRST-SELECTOR-CROSS-CONNECTION DRAWING. Indicates the cross-connection scheme between these two equipments and guides the installation team when making cross-connections.

MANUAL FRONT-EQUIPMENT DRAWING. Indicates the jack panels, as well as the positions of the attendant's switchboard.

MANUAL KEYSHEET. Lists all manual equipment circuits by name; also lists manufacturer's circuit wiring diagram, and associated relay equipment assembly drawing numbers and options.

POWER SCHEMATIC. Wiring record of the central office's ac service circuit, charging circuit, battery and control circuit, and discharge circuit.

RELAY-RACK DRAWING. Indicates the equipment mounted on each relay rack and the position in which the equipment is mounted.

RINGING SCHEMATIC. General layout of the central-office tone-and-interrupter, test and control circuits associated with the ringing machines.

SWITCHING-EQUIPMENT-AND-CIRCUIT LIST.

Provides a reference to all manufacturer's drawings associated with the central office switching equipment.

DRDTO.

Classified definition. (Reference: AFM 100-50.)

DRESSER CABLE.

Shaped hardwood block with a handle for beating the ends of sleeves into shape for wiping.

DRIFT.

1. Relative motion between plane and target at right angles to the desired course, caused either by wind or target velocity.

2. Undesired change of frequency in time usually due to charges of circuit constants with temperature.

3. Resultant motion of a group of electrons in some general direction.

4. Measure of the change of an oscillator frequency from its desired frequency.

DRIFT ANGLE.

Horizontal angle between the longitudinal axis of an aircraft and its path relative to the ground.

DRIFT CORRECTION ANGLE.

Angular difference between the desired course and the heading.

DRIFT SPACE.

Distance between the buncher and catcher in a velocity-modulated vacuum tube.

DRIFT SPEED.

Average speed at which electrons or ions progress through a medium.

DRIP-PROOF MACHINE.

Machine in which the ventilating openings are so constructed that drops of liquid or solid particles falling on the machine at any angle not greater than 15 degrees from the vertical, cannot enter the machine directly or by striking and running along a horizontal or inwardly inclined surface.

DRIVE BELT.

Belt used to transmit power from a driving motor to a turntable in a recorder, phonograph, or other machine.

DRIVE HOLES.

Holes spaced around the center hold of a recording disk to engage a drive pin in the turntable, preventing the disk from slipping during recording.

DRIVE PIN.

Projecting rod positioned near the center pin of a phonograph, used with a two hole phonograph disk to prevent the record from slipping on the turntable during recording.

DRIVE-PIN HOLE.

Hole in the record which fits over the turntable drive pin.

DRIVEN ELEMENT.

Antenna array element that receives power directly from the transmitter.

DRIVEN SWEEP.

Sweep triggered only by incoming signal or trigger.

DRIVER.

1. Electronic circuit which supplies input to another electronic circuit.
2. Stage of amplification which precedes the power output stage.
3. Circuit in a radar transmitter which produces a pulse to be delivered to the control grid of the modulator tube.
4. Unit (or stage) driving another unit (or stage), as PPI driver, etc. (Reference: EXCITATION.)

DRIVER STAGE.

Amplifier stage just ahead of a high-power stage.

DRIVER TUBE.

Tube used in a driver stage.

DRIVING POINT IMPEDANCE.

1. Pair of terminals of a network, the ratio of

an applied potential difference to the resultant current at these terminals, all terminals being terminated in any specified manner.

2. Complex quotient at any driving point of the force (or sound pressure) by the velocity (linear or volume) of vibration at that point.

DRIVING SIGNALS.

Television signals that time the scanning at the pick-up point.

DROLLER.

Circuit which distorts a square pulse by reducing the sharpness of leading and trailing edges, and tending to round the top of the pulse.

DRONE.

Remotely controlled aircraft.

DROP.

1. Action which causes a track to be dropped from the system, either automatically or as the result of a manually inserted instruction.
2. Visual shutter device consisting of an electromagnet and a visual target either moved or tripped magnetically to a position indicating the condition supervised. (Reference: DROP SIGNAL.)

POTENTIAL. Difference in potential between the two ends of a resistance with a current flowing through it.

RELAY. Relay actuated by a ringing current and used to call an operator's attention to a subscriber's line.

SUBSCRIBER'S. Line from a cable termination to a subscriber's location.

SWITCHBOARD. Entire switchboard circuit which terminates a line circuit.

DROP BAR.

Protective device used to ground a high-voltage capacitor when opening a door.

DROP BRACKET TRANSPOSITION.

Reversal of the relative positions of two parallel wire conductors while depressing one, so that the cross-over is in a vertical plane.

DROP CYCLE.

Track status indicating that a particular track is about to be dropped from the system.

DROP MESSAGE.

Message dropped from an aircraft to a ground or surface unit.

DROP REPEATER.

Microwave repeater that is provided with the necessary equipment for local termination of one or more circuits.

DROP SIGNAL.

Visual shutter device consisting of an electromagnet and visual target either moved or tripped magnetically to a position indicating the condition supervised. (Reference: DROP.)

DROP WIRE.

Wire suitable for extending an open wire or cable pair from a pole or cable terminal to a building.

DROP ZONE.

Specified area upon which airborne troops, equipment, and supplies are dropped by parachute, or on which supplies and equipment may be delivered by free fall.

DROPOUT.

Dropout value of a relay is the maximum current, voltage, power, etc., at which it will release from its energized position. For example, an overcurrent relay which closes its contacts on pick-up will just open the contacts on dropout.

DROPOUT CURRENT.

Value to which relay coil current must be reduced after the relay is closed in order to release the armature and open the relay contacts.

DROPOUT VOLTAGE OR CURRENT.

Voltage or current at which a magnetically operated device will release to its deenergized position.

DROPPING INTERVAL.

Interval of time in seconds between each ejection of chaff.

DROPPING RESISTOR.

Resistor used to decrease a given voltage to a lower value.

DRUM.

Hollow cylinder on which is secured facsimile copy to be transmitted or the paper or film for recording received copy.

DRUM SHIELD, MANHOLE.

Adjustable shield, made of sheet iron and placed around the ring of a manhole opening.

DRUM ARMATURE.

Ordinary type of armature used in rotating machines, having axial active wires rotating through a magnetic field in which the lines of force are chiefly radial.

DRUM CONTROLLER.

Electrical controller which utilizes a drum switch as the main switching element. A drum controller usually consists of a drum switch and a resistor.

DRUM RECORDER.

Facsimile recorder in which the record sheet is mounted on a rotating drum or cylinder.

DRUM SPEED.

1. Number of revolutions per minute made by the transmitting or receiving drum of the facsimile transmitter or recorder.

2. Number of scanning lines per minute. (Reference: STROKE.)

DRUM SWITCH.

Switch in which the electrical contacts are made on segments or surfaces on the periphery of a rotating cylinder or drum by the operation of a rotating cam. Used for complex band switching or circuit changes.

DRUM TRANSMITTER.

Facsimile transmitter in which the subject copy is mounted on a rotating drum or cylinder.

DRY BATTERY.

Series, parallel, or series-parallel arrangement of dry cells in a single housing to provide desired voltage and current values.

DRY BULB.

Thermometer used to determine the temperature of the air.

DRY CELL.

Source of electrical energy depending on the reaction of a chemical paste on carbon and metal or two metals for its supply.

DRY CONTACT.

Contact through which no direct current flows.

DRY FLASHOVER VOLTAGE.

Voltage at which the air surrounding a clean dry insulator or shell completely breaks down between electrodes.

DRY-DISK RECTIFIER.

Rectifier consisting of disks of metal and other material in contact under pressure, such as a copper-oxide rectifier or selenium rectifier.

DRY-ELECTROLYTIC CAPACITOR.

Electrolytic capacitor in which the electrolyte is in paste, rather than liquid form. (Reference: ELECTROLYTIC CAPACITOR.)

dsc (DOUBLE-SILK-COVERED WIRE).

DSMA (DEFENSE SUPPLY MANAGEMENT AGENCY).

dspch (DISPATCH, DISPATCHER).

1. Dispatch; a message, usually an official communications, sent from one person to another.
2. Dispatcher; one who dispatches something, as an aircraft dispatcher.

dt (DATE).

1. Point of time at which a transaction or event takes place.
2. Point or period of time to which anything is referred as present, as to usage, style, knowledge, etc.

DT CUT CRYSTAL.

Crystal plate of specified dimensions with an edge parallel to the X-axis and making an angle of 53 degrees with the Z-axis.

DTA (DISTRIBUTING TERMINAL ASSEMBLY).

Frame situated between each pair of selector bays,

to provide terminal facilities for the selector bank wiring and facilities for cross-connection to trunks running to succeeding switches.

dta wire (DOUBLE-WIRE ARMORED).

DTG (DATE-TIME GROUP).

DTI (DISTORTION TRANSMISSION IMPAIRMENT).

Reduction of effective transmission due to the presence of distortion.

DUAL-AUTOMATIC RADIO COMPASS.

Arrangement of two automatic radio compasses feeding into a dual azimuth indicator having two pointers, each indicating the direction to a different radio station. The complete bearing is thus visible to the pilot at all times, eliminating the need for tuning to one station after another to obtain a radio fix.

DUAL BEAM CRT (CATHODE-RAY TUBE).

Cathode-ray tube having either two separate electron guns producing two electron beams or a method of splitting the beam from one gun into two separate beams before deflection.

DUAL CAPACITATOR.

Two capacitors in a single housing.

DUAL CHANNEL AMPLIFIER.

Instrument designed to amplify an audio signal.

DUAL DIVERSITY RECEIVER.

Radio receiver that receives signals from two different receiving antennas and uses whichever signal is the stronger at each instant, in order to offset fading. In one arrangement, two identical RF systems, each with its own antenna, feed a common audio-frequency channel. In another arrangement, a single receiver is changed over from one antenna to the other by electronic switching at a rate fast enough to prevent loss of intelligibility.

DUAL METER.

With reference to pulse analyzer presentations, two D'Arsonval meters are used, one calibrated in PRF and one calibrated in PD.

DUAL MODULATION.

Process of modulating a common carrier wave, or subcarrier, by two different types of modulation each conveying separate intelligence.

DUBBING.

1. Recording from one or more records.
2. In a cutting stylus, same as burnishing surface.
3. Copying a recording by playing it and feeding the resulting af signal into a sound recorder.

DUCT.

Underground tube or pipe used as a path for a cable.

ARTIFICIAL LINE. Balancing network, simulating the impedance of the real line and distant terminal apparatus, which is employed in a duplex circuit for the purpose of making the receiving device unresponsive to outgoing signal currents.

MULTIPLE TILE. Tile member arranged to hold several cables in separate channels.

DUCT BANK.

Arrangement of conduit providing one or more continuous ducts between two points. (Reference: CONDUIT RUN.)

DUCT EDGE SHIELD.

Collar or thimble, usually flared, inserted at the duct entrance in a manhole to protect the cable sheath or insulation from being worn away by the duct edge. (Reference: CABLE SHIELD.)

DUCT ENTRANCE.

Opening of a duct at a manhole, distributor box, or other accessible space.

DUCT RODDING.

Threading of a duct by means of a jointed rod of suitable design for pulling in the cable-pulling rope, mandrel, or the cable itself.

DUCT RUN.

System of underground cuts.

DUCT SEALING.

Closing of the duct entrance to exclude water, gas, or other undesirable substances.

DUCTILITY.

Property of a material which permits deformation to occur without fracture.

DUDDEI ARC.

DC electric arc that generates an AF current and corresponding sound waves when a coil and capacitor are connected in parallel with the arc. This gives a musical tone. (Reference: SINGING ARC.)

DUE-IN.

Quantity of unsupplied items on requisitions submitted by unit supply officers to higher supply echelons.

DUE-OUT.

Obligation assumed and recorded by any supply echelon to issue at a subsequent date. A requested item which was not immediately available for supply but one for which source of supply has been established.

DULLING.

Forming the burnishing surface of the cutting stylus.

DUMBBELL WAVEGUIDE.

Waveguide section shaped like a dumbbell.

DUMMY.

1. Simulating device with no operating features as, a dummy heat coil.
2. Telegraphy network simulating a customers loop for adjusting a telegraph repeater. The dummy side of the repeater is that toward the customer.

DUMMY ANTENNA.

Resistor network or other device that duplicates the electrical characteristics of a particular antenna but does not radiate an appreciable amount of energy. Used chiefly for testing and adjusting transmitters.

DUMMY GROUP.

Group of dummy letters and/or figures.

DUMMY LETTERS.

Letters with no plain text significance inserted within a cryptogram (a) with the intent to delay or prevent its solution, or (b) to complete the last enciphered group for transmission purposes; a null.

DUMMY LOAD.

Device in which the output power can be absorbed, used for simulating conditions of operation for test purposes. Usually a load to simulate an antenna.

DUMMY MESSAGE.

Message sent for some purpose other than its content.

DUMMY PLUG.

Plug which makes no electrical contact but which holds jack springs in an operated position or which blocks the jack from use.

DUMP.

Temporary stock of supplies or a place of storage established in the field or afloat where military supplies are held temporarily. When supplies are issued from dumps, they become distributing points.

DUODIODE.

Vacuum tube (or semiconductor) having two diodes in the same envelope. (Reference: DOUBLE-DIODE.)

DUODIODE-PENTODE.

Vacuum tube having two diodes and a pentode in the same envelope.

DUOLATERAL COIL.

Coil having a special criss-cross or honeycomb, winding to reduce distributed capacitance.

DUOTRIODE.

Vacuum tube having two triodes in the same envelope. (Reference: DOUBLE TRIODE.)

dupe (DUPLICATE, DUPLICATION).

1. Duplicate; that which exactly resembles or corresponds to something else; hence, a copy; counterpart.
2. Duplication; act of duplicating, or state of being duplicated; especially a doubling; a fold.

DUPLEX.

1. Method of operation of a communication circuit where each end can simultaneously transmit and receive. Ordinary telephone are duplex. When used on a radio circuit duplex operation required two frequencies.
2. Two-in-one as, two conductors with a common over-all insulation or two telegraph transmission channels over one wire.

DUPLEX CIRCUIT.

1. Method of operation in which all electrical communications between stations take place in both directions simultaneously.
2. Denotes a circuit which permits electrical communication between stations in both directions simultaneously.

DUPLEX OPERATION.

Operation of associated transmitting and receiving apparatus in which the processes of transmission and reception are concurrent.

DUPLEX SYSTEM.

Telegraph system which affords simultaneous independent operation in opposite directions over the same channel.

DUPLEX TUBE.

Combination of two vacuum tubes in one envelope.

DUPLEXER.

1. Radar device which utilizes the finite delay between the transmission of a pulse and the echo thereof so as to permit the connection of the transmitter and receiver to a common antenna.
2. Device which permits the use of the same antenna for both transmitting and receiving.

DUPLICATE.

That which exactly resembles or corresponds to something else; hence, a copy counterpart.

DUPLICATE LINES.

Lines of substantially the same characteristics, normally operated in parallel, connecting the same supply point with the same distribution point.

DUPLICATION.

Act of duplicating, or state of being duplicated; especially a doubling; a fold.

DURAL SHANK.

Duraluminum shank commonly used on a sapphire or satellite cutting stylus.

DURALUMINUM.

Alloy containing approximately 95.5 parts aluminum, 3 parts copper, 1 part manganese, and 0.5 part magnesium. It is comparable in strength to soft steel.

DURATION CONTROL.

Control for adjusting the time duration of reduced gain in a sensitivity-time control circuit.

DUST CORE.

Pulverized iron core, consisting of extremely fine iron particles mixed with a binding material, for use in RF coils.

DUST COUNTER.

Instrument for determining approximately the number of dust particles or condensation nuclei per unit volume in a sample of air.

DUTY.

Requirement of service which defines the degree of regularity of the load.

DUTY CLASSIFICATION OF A RELAY.

Expression of the frequency with which the relay may be required to operate without exceeding prescribed limitations.

DUTY CYCLE.

1. Cycle of starting, running, and stopping operations that a motor or other equipment of intermittent duty performs.
2. Ratio of pulse duration time to pulse repetition time, which is the same as the ratio of average power to peak power in a pulse.

DUTY CYCLEMETER.

Test meter which gives direct reading of duty cycle.

DUTY FACTOR.

Duty factor of a wave composed of pulses that

occur at regular intervals in the product of the pulse duration and the pulse repetition frequency. The ratio of pulse interval to pulse length. Reciprocal of duty cycle.

DVER (DEFENSE VISUAL FLIGHT RULES).

Rules applicable to visual rules (VFR) which originate within or penetrate an air defense identification zone.

DW.

Type of wire designation for drop wire.

DW (DOUBLE WEIGHT).**DWA (DOUBLE-WIRE ARMOR).**

Designation used for wire cable.

DWG (DRAWING).

Picture or sketch.

DX.

1. Reception of stations located at a distance from the receiver.
2. Teletypewriter designation for duplex repeater.

DYN (DYNAMOTOR).

Combination motor and generator on a single shaft.

DYNAMETER.

Device for measuring magnifying power.

DYNAMIC CHARACTERISTICS.

Relation between the instantaneous plate voltage and plate current of a vacuum tube as the voltage applied to the grid is moved; thus, the characteristics of a vacuum tube during operation.

DYNAMIC LOUDSPEAKER.

Loudspeaker in which the coil carrying the AF current is attached to the moving diaphragm or cone (Reference: MOVING COIL LOUDSPEAKER.)

DYNAMIC MICROPHONE.

Microphone having a diaphragm with a coil that moves in a magnetic field. (Reference: MOVING COIL MICROPHONE.)

DYNAMIC PICK-UP.

Phonograph pick-up in which the electrical output results from the motion of a conductor in a magnetic field.

DYNAMIC PLATE IMPEDANCE.

Internal resistance to the flow of alternating current between the cathode and plate of a tube. It is equal to small change in plate voltage divided by the corresponding change in plate voltage divided by the corresponding change in plate current, and is expressed in ohms. It is also called ac resistance, internal impedance, plate impedance, and dynamic plate impedance; its symbol is r_p .

DYNAMIC PLATE RESISTANCE.

Opposition that the plate circuit of a vacuum tube offers to a small increment of plate voltage. It is the ratio of a small change in plate voltage to the resulting change in the plate current, other voltages remaining constant. Dynamic plate resistance is usually designated by r_p and is expressed in ohms. (Reference: ALTERNATING-CURRENT PLATE RESISTANCE.)

DYNAMIC RANGE.

1. Range over which the input signal amplitude may vary and yet maintain an undistorted output.
2. Transmission system difference in decibels between the noise level of the system and its overload level.

DYNAMIC REGULATOR.

Transmission regulator in which the adjusting mechanism is in self-equilibrium at only one or a few settings and requires control power to maintain it at any other setting.

DYNAMIC SENSITIVITY.

Photo tube quotient of the alternating component of anode current by the alternating component of incident radiant flux. This is variational and not a total sensitivity. As most precisely used, the term refers to infinitesimal amplitudes.

DYNAMIC SPEAKER.

Loudspeaker in which the diaphragm motion is generated by means of alternating current in a

moving coil mounted on the diaphragm with the coil in a magnetic field.

DYNAMICS.

Branch of physics which deals with forces and their action upon material bodies.

DYNAMO.

Machine for converting mechanical energy into electrical energy generally called a generator. The term dynamo more often applies to a dc generator, while alternator applies to an ac generator.

DYNAMOELECTRIC.

Pertaining to the relation between mechanical force and electrical energy, or vice versa.

DYNAMOELECTRIC MACHINE.

Rotating device that converts mechanical energy into electrical energy, or vice versa, as a dynamo, alternator, or electric motor.

DYNAMOMETER-TYPE INSTRUMENT.

Instrument in which current, voltage, or power is measured by the force between a fixed coil and moving coil.

DYNAMOTOR.

Combination electric motor and dc generator having two or more separate armature windings and a common set of field poles. One armature winding receiving direct current, operates as a motor, producing rotation, while the others operate as a dynamo or generator, generating voltage. More simply a rotating device used to change one dc voltage to a different dc voltage.

DYNATROL OSCILLATOR.

Negative-resistance oscillator in which negative resistance is derived between plate and cathode of a screen-grid tube operating so that secondary electrons produced at the plate are attached to the higher potential screen grid.

DYNATRON.

Four-electrode vacuum tube so designed that secondary emission of electrons from the plate causes the plate current to decrease as plate voltage is increased, giving a negative resistance characteristic. Used in oscillator circuits.

DYNATRON OSCILLATION.

Oscillation occurring in a vacuum-tube circuit due to secondary emission of electrons from the plate giving a negative resistance characteristic.

DYNATRON OSCILLATOR.

Negative-resistance oscillator in which the negative resistance is devised between plate and cathode circuits. Maintains oscillations in a resonant circuit connected in parallel with the plate and cathode.

DYNE.

Unit of force in the centimeter-gram-second system. It is that force which will give an acceleration of one centimeter per second during each second to a free mass of one gram.

DYNE PER SQUARE CENTIMETER.

Unit of sound pressure. The term bar or barve was originally applied to a pressure of 10^6 dynes per square centimeter, and in all other fields except acoustics it is used with this meaning; in acoustics it is used to mean one dyne per square centimeter.

DYNODE.

One of the reflecting electron mirrors in a multiplier-type phototube. It is coated with a material capable of high secondary emission.

DZ (DROP ZONE).

Area on the ground designated as the place where troops are to be dropped from aircraft.

E

E.

Symbol for voltage.

E/A (ENEMY AIRCRAFT).

Hostile aircraft.

Eg.

Symbol for the grid voltage.

Ep.

Symbol for plate voltage.

Esg.

Symbol for screen grid voltage.

E-BEND.

Smooth change in the direction of the axis of a waveguide, throughout which the axis remains in a plane parallel to the direction of polarization.

E-INDICATOR.

Modification of type B radar indicator. The signal appears as a bright spot with range as the horizontal coordinate and elevation as the vertical coordinate.

E-LAYER.

One of the regular ionospheric layers with an average height of about 100 kilometers. This layer occurs during daylight hours and its ionization is dependent on the sun's angle. The principal layer corresponds roughly to what was formerly called the Kennelly-Heaviside layer. In addition, areas of abnormally intense ionization frequently occur, which are called "sporadic B."

E-MODE, TRANSVERSE MAGNETIC.

Type mode in which the longitudinal component of the magnetic field is zero and the longitudinal component of the electric field is not zero.

E-PLANT BEND.

Waveguide E-bend is a smooth change in the direction of the axis of a waveguide, throughout which the axis remains in a plane parallel to the direction of polarization.

E-PLANT T-JUNCTION.

Waveguide T-junction in which a change in structure occurs in the plane of the electric field.

E-REGION.

Region in the ionosphere, between about 55 and 85 miles (90 to 160 kilometers) above the surface of the earth, that contains ionized layers capable of bending (refracting or reflecting) radio waves.

E-SCAN.

Modification of B-scan. Signal appears as a bright spot with range as the horizontal coordinate and elevation as the vertical coordinate.

E-SCOPE.

(Reference: E-SCAN.)

E-UNITS.

Radar signal-noise ratio.

<i>E-units</i>	<i>Ratio</i>	<i>Description</i>
E-1	1 to 1	Barely Perceptible
E-2	2 to 1	Weak
E-3	4 to 1	Good
E-4	8 to 1	Strong
E-5	16 to 1	Very strong or Saturating.

E-VECTOR.

Vector representing the electric field of an electromagnetic wave. In free space it is perpendicular to the direction of propagation.

E-WAVE.

Designation for TM (transverse magnetic) wave. One of the two classes of electromagnetic waves that can be sent through wave guides.

E-ZONE.

One of the three zones into which the earth is divided to show the variations of the F2 layer in respect to longitude when making frequency predictions. This zone roughly covers what is known as the eastern hemisphere: Asia, Australia, Philippines and Japan.

EADF (EASTERN AIR DEFENSE FORCE)

Major component of the Air Defense Command, providing air defense for the eastern United States, covering nineteen states and the District of Columbia.

EAM (ELECTRICAL ACCOUNTING MACHINE).

EARLY WARNING.

Warning system near the outer boundaries of a defended area to warn of approaching airborne objects.

EARLY WARNING RADAR.

System that sweeps the skies in all directions and at all elevations to detect the approach of enemy planes and/or missiles early enough for fighter planes to be in the air ready to meet their approach or for other adequate defense measures to be taken.

EARLY WARNING STATION.

Essential element of this type of installation is surveillance and the absence of air-intercept control capability. In isolated instances, it may be organized and manned to provide for the extension of some function delegated by the ADDC or ADCC to which it is operationally responsible.

EARTH.

Term used in Great Britain for a ground which acts as a large conductor and a return path for both radio and electrical systems.

EARTH BORER.

Motor-driven auger mounted on a construction vehicle and used to drill holes for poles.

EARTH CURRENTS.

1. Currents flowing through the ground due to natural causes, affecting the magnetic field of the earth and sometimes causing magnetic storms.
2. Return, fault, leakage, or stray currents passing through the earth from electrical equipment.

EARTH INDUCTOR.

Coil arranged to permit rotation in the earth's magnetic field.

EARTH INDUCTOR COMPASS.

Compass whose indications depend on the current generated in a coil revolving in the magnetic field of the earth. (Reference: INDUCTION COMPASS.)

EARTHED.

Connected to earth or to some conducting body

that serves in place of the earth. A British term, corresponding to grounded.

EAST. (EAST, EASTERN).

1. Direction of sunrise; accurately, that point on the sensible horizon where the center of the sun is seen to rise at the equinox.
2. Direction toward the right hand of one facing north.
3. Eastern; belonging to or characteristic of the East.

EAST TERMINAL.

Conventions (rules) for directions of transmission of various frequency ranges have been established in order to minimize interference between operating systems. For this reason, the "East" terminal of a microwave or carrier system must be so arranged that the frequency allocation of both the outgoing and incoming channels corresponds to the established pattern. It is important that such conventions be respected, if only to guard against possible future conflict. Geographically, and "East" terminal is usually located at the east or north end of a circuit.

EASTERN AIR DEFENSE FORCE.

Major component of the Air Defense Command, providing air defense for the eastern United States, covering nineteen states and the District of Columbia.

EASTERN STANDARD TIME.

Mean time based on the 75th meridian, west longitude.

ECA (ECONOMIC COOPERATION ADMINISTRATION).

ECC (EUROPEAN COORDINATING COMMITTEE).
Consists of United States Representative to Council of Deputies as Chairman, United States Military Representatives for Europe.

ECCENTRIC.

1. Circle not having the same center as another within it.
2. Device mounted off center for converting rotary motion into reciprocating motion.

ECCENTRIC MOUNTING.

Type lens mounting that consists of eccentric rings that may be rotated to shift the axis of the lens to a prescribed position.

ECCLES-JORDAN TRIGGER CIRCUIT.

Multivibrator circuit in which the output and input portions of two electronic amplifiers are direct coupled. It has two conditions of stability, either one of which endures until some action causes the nonconducting tube to conduct, then the functions of the electronic amplifiers reverse. (Reference: FLIP-FLOP CIRCUIT.)

ECCM (ELECTRONIC COUNTER - COUNTERMEASURES).

Various tactics used to reduce the effectiveness of electronic countermeasures.

ECH (ECHELON).

1. Subdivision of a headquarters.
2. Separate level of command. As compared to a regiment, a division is a higher echelon, a battalion is a lower echelon.
3. Fraction of a command in the direction of depth, to which a principal combat mission is assigned.
4. Formation in which the subdivisions are placed one behind another, extending beyond and unmasking one another wholly or in part.

FIFTH. Operations performed in fixed installations designated as base shops or depots. It has equipment for the complete rebuilding of material. It manufactures items when no other source of supply is available.

FIRST. Operations performed by the user, wearer, or operator of the equipment. Includes care, use, operation, cleaning, preservation, and lubrication.

FOURTH. Operations usually performed by an established pool, of variable numbers and types, of heavy maintenance and supply units, formed as a semimobile shop, serving an area. Its main function is the rebuilding of items, usually from serviceable parts on hand.

SECOND. Operations performed by a maintenance platoon, or section, of the combat company, battalion, or regiment. This maintenance unit carries a predetermined stock of parts called the organizational spare parts set, and has skilled mechanics, capable of the maintenance of equipment in forward areas.

STRAPPING. Connecting the end of each magnetron segment by a single strap to the next segment. The straps are all alike and are arranged similarly to a set of blades in a radial-flow turbine.

THIRD. Operations that are usually performed by mobile maintenance organizations attached to, designated for, or an organic part of troop units.

ECHO.

1. Wave which has been reflected or otherwise returned with sufficient magnitude and delay to be perceived, in some manner, as a wave distinct from that directly transmitted.
2. Signal reflected by a distant target to a radar set.
3. Deflection or indication on the screen of a cathode-ray tube representing a target.
4. Facsimile multiple reproduction on the record sheet due to the same original facsimile signal arriving at different times from transmission paths of different lengths. This may be caused by multipath transmission on radio circuits or reflections on wire circuits.
5. Electronic condition in a simple or integrated radio system which causes a signal such as a voice signal to be reflected from some point or points in the circuit back to the point of origination of the signal.

ARTIFICIAL. 1. Received reflections of a transmitted pulse from an artificial target, such as an echo box, corner reflector, or other metallic reflecting surface.

2. Delayed signal from a pulsed RF signal generator.

FRADULENT. False echo produced by use of deceptive devices.

PERMANENT. Signal received by a ground-based radar as a result of reflections from fixed objects.

RADAR. 1. Radio frequency energy received after reflection from an object.
2. Term is also used to describe the deflection or change of intensity on a cathode-ray tube display produced by a radar echo.

ECHO AREA.

Equivalent echoing area of a target. This quantity indicates the relative amount of radar energy which the target will reflect.

ECHO BOX.

High Q resonant cavity that receives RF energy through a pick-up antenna or a directional coupler during the transmitted pulse and returns this energy to the radar set immediately after the pulse through the same antenna or coupler. The echo box may be used to test the overall performance of the radar set or it may be used to demonstrate graphically, on a PPI scope, the form of the antenna pattern.

ECHO BOX ANTENNA.

Small dipole supported on a bracket near the radar antenna, used to pick up the radar pulse and to feed the echo box oscillations back to the radar antenna.

ECHO CHAMBER.

Reverberant room or inclosure used in a radio studio to add hollow effects or actual echoes to radio programs.

ECHO DEPTH SOUNDING.

System of determining ocean depth by measuring the time interval between production of a sound just below the surface of the water and arrival of the echo reflected from the ocean bottom.

ECHO HOMING.

Classified definition. (Reference: AFM 100-50.)

ECHO MATCHING.

Turning the antenna or array until the two echoes that correspond with the two directions of the beam are equal.

ECHO RANGING.

Determination of both direction and distance of an underwater object from a vessel.

ECHO SOUNDER.

Sounding device used by ships to determine the depth of water.

ECHO SPLITTING.

In certain radar equipment, the echo return is split and appears as a double indication on the screen of the radar indicator. This splitting is accomplished by special electronic circuits associated with the antenna lobe-switching mechanism. When the two echo indications are of equal height, the target bearing is read from a calibrated scale.

ECHO SUPPRESSION.

IFF (identification, friend or foe) control used to disable the responder for a short time to prevent reception of echoes from nearby targets that are produced by the interrogator pulse.

ECHO SUPPRESSOR.

Voice-operated device for connection to a two-way telephone circuit to attenuate echo currents in one direction caused by telephone currents in the other direction.

ECHOES.

Reflected radar signal received from an object by a radar receiver.

ECL (EQUIPMENT COMPONENT LIST).

Publication prescribing the kits and sets of tools or equipment needed by an individual, activity, or organization to perform a specific duty or function.

ECLIPTIC.

Term used in reference to the annual path of the earth around the sun.

ECM (ELECTRONIC COUNTERMEASURES).

Any of the various offensive or defensive tactics which use electronic and reflecting devices to reduce the effectiveness of enemy equipment or of tactics employing electromagnetic radiations.

ECM HOMING.

Act of approaching an enemy source of electromagnetic radiation guided by a receiver with

directional antennas.

ECM TACTICS.

General term which applies to those methods employed to nullify or reduce the effectiveness of a defense system.

ECMP (ELECTRONIC COUNTERMEASURES PROGRAM).

ECO (ELECTRON-COUPLED OSCILLATOR).

Oscillator which employs electron coupling between the oscillator and the output or load, using a vacuum tube as the medium for coupling.

ECP (ENGINEERING CHANGE PROPOSED).

ECSA (EUROPEAN COMMUNICATIONS SECURITY AGENCY).

EDDY CURRENT.

Current induced in a metal by a changing electromagnetic field.

EDGE GRINDING.

Hand lapping the edges of a crystal oscillator plate to increase the activity.

EDISON BASE.

Standard screw-thread base used for ordinary electric lamps.

EDISON DISTRIBUTION SYSTEM.

Three wire dc distribution system, usually 120-240 volts for combined light and power service from a single set of mains.

EDISON EFFECT.

Phenomena wherein electrons, emitted from a heated element within a vacuum tube, will flow to a second element that is connected to a positive potential with respect to the emitter but will not flow to an element that is connected to a negative potential.

EDISON STORAGE CELL.

Storage cell having negative plates of iron oxide and positive plates of nickel oxide immersed in an alkaline solution and producing an open-circuit voltage of 1.2 volts per cell.

EDP (ELECTRONIC DATA-PROCESSING) CENTER.

Automatically operated equipment engineered to

simplify the use and interpretation of the mass of data gathered by modern instrument installations. Can automatically handle information fed to it from thousands of widely scattered points.

EDPE (ELECTRONIC DATA PROCESSING EQUIPMENT).

Equipment used to process the Punch Card Accounting Machine Cards used in the AMC LOGCOM SYSTEM. The electronic data processing equipment is located at specified centers to process other Air Material Area or Air Force Depot records.

EEI (ESSENTIAL ELEMENTS OF INFORMATION).

Statement of the additional data regarding the enemy, terrain not under our control, or meteorological or hydrographic conditions, which must be collected and processed in order to enable a commander to make a sound decision as to course of action, conduct a maneuver, avoid surprise, or formulate details of a plan of operations. The essential elements are usually enunciated in the form of questions posed for the purpose of focusing the attention and activities of all collecting agencies on the high-priority information which is needed at a particular time.

EFFECTIVE ANTENNA LENGTH.

Length which, when multiplied by the current at the point of maximum current, will give the same product as the length and uniform current of an elementary electric dipole at the same location, giving the same radio field intensity in the direction of maximum radiation.

EFFECTIVE APERTURE OR OBJECTIVE.

(Reference: APERTURE.)

EFFECTIVE AREA.

Square of the wavelength multiplied by the power gain (or directive gain) in that direction, and divided by 4π .

Note. When power gain is used, the effective area is that for power reception; when directive gain is used, the effective area is that for directivity.

EFFECTIVE CONDUCTIVITY.

Conductance between the opposite parallel faces of a portion of material having unit length and unit cross section.

EFFECTIVE CONFUSION AREA.

Amount of chaff whose radar cross-sectional area equals the radar cross-sectional area of the particular aircraft at a particular frequency.

EFFECTIVE CONFUSION QUANTITY.

Number of units necessary to hide a given target in the same resolving radar cell.

EFFECTIVE CURRENT.

Value of alternating current which will give the same heating effect as the corresponding value of direct current. The effective value is 0.707 times the peak value in the case of sine-wave alternating currents.

EFFECTIVE CUTOFF FREQUENCY.

Frequency at which its insertion loss between specified terminating impedances exceeds by some specified amount the loss at some reference point in the transmission band.

EFFECTIVE FIELD INTENSITY.

Root-mean-square value of the inverse distance fields at a distance of one mile from the transmitting antenna in all directions in the horizontal plane.

EFFECTIVE HEIGHT.

1. Quantity used to define the transmission characteristics of an antenna. For a receiving antenna, the effective height defines the voltage induced in the antenna when multiplied by the incident field intensity.

2. In low frequency applications the term "effective height" is applied to loaded or nonloaded vertical antennas and is equal to the movement of the current distribution in the vertical section divided by the input current.

EFFECTIVE PERCENTAGE MODULATION.

Ratio of the peak value of the fundamental component of the envelope of the dc component in the modulated conditions, expressed in per cent.

EFFECTIVE POWER.

Product of the antenna input power in kilowatts and the antenna gain.

EFFECTIVE RADIUS OF THE EARTH.

Effective value for this radius of the earth, which is used in place of the geometrical radius to correct for atmospheric refraction when the index or refraction in the atmosphere changes linearly with height.

Note. Under conditions of standard refraction, the effective radius of the earth is 8.5×10^6 meters, or $4/3$ the geometrical radius.

EFFECTIVE RESISTANCE.

Quotient of the average rate of dissipation of electric energy during a cycle divided by the square of the effective current.

EFFECTIVE SIGNAL RADIATED.

Basis for licensing radio transmitters, equal to the product of the square root of the effective radiated power, times the antenna height in feet above the ground level.

EFFECTIVE SOUND PRESSURE.

Root-mean-square value of the instantaneous sound pressure, at a point, over a complete cycle. The unit is the dyne per square centimeter.

EFFECTIVE VALUE.

Alternating-current value that will produce the same amount of heat in a resistance as the corresponding direct-current value. The effective value is also called the RMS (root-mean-square) value. It is 0.707 times the peak value.

EFFICIENCY.

Efficiency of an electroacoustic transducer is the ratio of the useful power output to the signal power input.

MECHANICAL. Ratio between the brake horsepower (BHP) and the indicated or total horsepower (IHP).

RATIFICATION. Ratio of the dc power output to the ac input of a rectifier.

VOLUMETRIC. Ratio of the volume of air or fuel mixture actually taken into the cylinder to the volume of the piston displacement.

EHF (EXTREMELY HIGH FREQUENCY).

1. Frequency; 30,000 to 300,000 megacycles (Millimetric waves).
2. Wave length: 0.1 to 1 centimeter.

EINSTEIN SHIFT.

Shift toward the red in the spectral lines of light which, according to the relativity theory, has its frequencies slightly reduced upon emerging from a strong gravitational field, such as that of a dense star.

EINTHOVEN STRING GALVANOMETER.

Moving coil type of galvanometer where the coil is a single wire suspended between the poles of a powerful electromagnet.

ELASTANCE.

Measure of the difficulty with which an electric displacement can be produced in a capacitor. It is measured in drafts, and is the reciprocal of capacitance.

ELASTICITY.

Ability of a material to return to its original shape after being stretched, bent, or otherwise deformed.

ELCO.

Classified definition. (Reference: AFM 100-50.)

ELEC (ELECTRIC, ELECTRICAL, ELECTRICIAN).

1. Electric; a nonconductor of electricity, as amber, glass, resin, etc., used to excite or store electricity.
2. Electrical; pertaining to, consisting of, containing, producing, derived from, produced, or operated by, electricity.
3. Electrician; one who designs, makes or repairs electric instruments, machinery, etc., or sets up electrical installations.

ELECOM (ELECTRONIC COMPUTING SYSTEM).

ELECT. (ELECTRONICS).

General term used to describe that branch of electrical science and technology that treats the behavior of electronics in vacuous and gaseous space. Lately extended to include transistors and other semiconductor devices.

ELECTRA.

Radio navigational system developed by Germany for wartime bombing and navigational uses. Essentially, it is a multiple radio range, providing a large number (frequency 24) of equisignal zones. Deviations from the equisignal zones were detected by hearing dots on one side of the zone and dashes (interlocked) on the other. Other methods, such as direction finding on the transmitter station, had to be employed to solve the ambiguity problem. A simple three-tower antenna system was used. The azimuths of several equisignal lanes could be adjusted together so that one of them would extend along any chosen great circle from the transmitter. Thus area bombing was carried out during instrument conditions by adjusting two ELEKTRA stations so that two of their lanes intersected over the target. ELEKTRA becomes SONNE when the equisignal zones are periodically rotated in bearing.

ELECTRIC.

Nonconductor of electricity, as amber, glass, resin, etc; used to excite or store electricity.

ELECTRIC ANGLE.

Means of specifying a particular instant in an ac cycle. One cycle is considered equal to 360 degrees, hence a half cycle is 180 degrees and a quarter cycle is 90 degrees. If one voltage reaches a peak value a quarter of a cycle after another, the electrical angle between the voltages (the phase difference) is 90 degrees.

ELECTRIC BRAZING.

Brazing process in which the heat is obtained from an electric current.

ELECTRIC BREAKDOWN.

Electric discharge taking place through an insulating material.

ELECTRIC CHARGE.

Electric energy stored on the surface of an insulated object.

ELECTRIC CHRONOGRAPH.

Apparatus for measuring and recording intervals of time with a high degree of accuracy. By closing contacts, current impulses are sent

through electromagnets that act on a recording pen to produce indications on a paper strip traveling at a known speed.

ELECTRIC CIRCUIT.

Path or circuit consisting of wires or group of interconnected paths and circuit elements so connected as to allow the flow of electric currents.

ELECTRIC CONTROLLER.

Device which serves to govern, in some predetermined manner, the electric power delivered to the apparatus to which it is connected.

ELECTRIC DETONATOR.

Cap filled with an explosive mixture in which is embedded a fine resistance wire connected to external terminals. When a current is sent through the wire, it heats and detonates the mixture.

ELECTRIC DIPOLE OR DOUBLET.

Simple antenna comprising a pair of conductors which is capable of radiating an electromagnetic wave in response to a displacement of electric charge from one conductor to the other.

ELECTRIC DISCHARGE LAMP.

Sealed glass inclosure in which light is produced by the passage of electricity through a metallic vapor or inert gas.

ELECTRIC EYE.

1. Popular name for a photoelectric cell of any type.
2. Cathode-ray tuning indicator tube used in some radio receivers.

ELECTRIC FIELD.

1. Region around an electrically charged body wherein lines of electric stress exist.
2. Space in which an electric charge will experience a force exerted upon it.

ELECTRIC FIELD INTENSITY.

1. Measure of the force that would be exerted at a point by a unit charge placed at that point.

2. Property of electromagnetic radiation measured in terms of the EMF it produces (Reference: ELECTRIC FIELD STRENGTH, ELECTRIC FORCE.)

ELECTRIC FIELD STRENGTH.

Magnitude of the electric field in an electromagnetic wave, usually in volts per meter.

ELECTRIC FILAMENT LAMP.

Glass bulb either evacuated or filled with an inert gas having a resistance element electrically heated to (and maintained at) incandescence.

ELECTRIC FILTER.

Electronic filter.

ELECTRIC FORCE.

Electric field intensity.

ELECTRIC FURNACE.

Furnace in which an electrical current is the source of heat.

ELECTRIC GENERATOR.

Machine that transforms mechanical power into electrical power.

ELECTRIC HYSTERESIS.

Internal friction occurring in a dielectric material like paper or mica when subjected to a varying electric field as in a capacitor in an ac circuit. It is accompanied by generation of heat in the dielectric and this can eventually cause breakdown of the capacitor.

ELECTRIC IMAGE.

Electrical counterpart of an object, comprising a fictitious distribution of electricity that is mathematically equivalent to the actual distribution on a nearby real object.

ELECTRIC INTENSITY.

Electric field intensity.

ELECTRIC LIGHT.

Light produced by an electric lamp. This light may be produced by using an electric current to heat a resistance material to incandescence, to ionize a gas and produce a luminous glow discharge, or to ionize a gas and thereby activate a fluorescent material.

ELECTRIC MOMENT.

Electrical moment of two charges having equal magnitude and opposite sign is a vector whose magnitude is equal to the product of the magnitude of each charge by the distance between the centers of the charges. The direction of the vector is from the negative to the positive charge.

ELECTRIC MOTOR.

Machine that transforms electrical energy into mechanical energy.

ELECTRIC NETWORK.

Combination of any number of electric elements, the impedances of which may be either lumped or distributed, or both. The elements may be connected in any manner. It is assumed to be a passive electric network (containing no source of energy) unless otherwise stated. An active electric network contains one or more sources of energy.

ELECTRIC OSCILLATIONS.

Oscillations set up whenever a circuit containing inductance and capacitance is electrically disturbed.

ELECTRIC POTENTIAL.

Potential of a point is the potential difference between that point and some equipotential surface (usually the earth which is arbitrarily chosen as having zero potential).

ELECTRIC POTENTIAL DIFFERENCE.

Potential difference between two points is equal to the work associated with the transfer of unit quantity of positive electricity from one point to the other. If outside energy is required to transfer unit positive quantity from a to b, b is at a higher potential than a.

ELECTRIC PRECIPITATION.

Collecting of dust or other finely divided particles of matter by charging the particles inductively with an electric field, then attracting them to highly charged collector plates.

ELECTRIC SHIELD.

Housing or metal usually aluminum or copper, placed around a circuit. The housing prevents interaction between circuits by providing a low

resistance and reflecting path to ground for high-frequency radiations.

ELECTRIC STRAIN GAGE.

Strain gage in which the change in the shape of the structural member under load causes a corresponding variation in the current flowing through the gage.

ELECTRIC STRENGTH.

Maximum potential gradient that dielectric material can withstand without rupture.

ELECTRIC SUPPLY LINES.

Conductors and their necessary supporting or containing structures which are located entirely outside of buildings and are used for conveying electric energy.

ELECTRIC TELEMETER.

Complete measuring, transmitting, and receiving apparatus for indicating, recording, or integrating at a distance, by electric translating means, the value of a quantity.

ELECTRIC TELEMETERING.

Measurements at a distance by the use of electric circuits.

ELECTRIC TRANSDUCER.

Transducer designed to be actuated by, or to deliver, electric waves.

ELECTRIC VECTOR.

Component of the electromagnetic field associated with electromagnetic radiation which is of the nature of an electric field. The electric vector is supposed to coexist with, but act at right angles to, the magnetic vector.

ELECTRIC WAVE.

Another name for an electromagnetic wave produced by oscillations of electricity in a conductor.

ELECTRIC WAVE FILTER.

Wave filter designed to separate electric waves of different frequencies.

ELECTRIC-CAPACITY ALTIMETER.

Altimeter, the indications of which depend on the variation of electric capacity with distance from the earth's surface.

ELECTRICAL.

Pertaining to, consisting of, containing, producing, derived from, or produced or operated by, electricity.

ELECTRICAL AXIS.

X-axis of a crystal.

ELECTRICAL BANDSPREAD.

Use of a small variable capacitor in parallel with each tuning capacitor section in a short-wave receiver to spread the stations in a single band over the entire range of a dial and thereby obtain more accurate tuning.

ELECTRICAL CENTER.

Point approximately midway between the ends of an inductor or resistor that divides the inductor or resistor into two equal electrical values.

ELECTRICAL CONTROL.

Control of a machine, device, or action by switches, relays, rheostats, or other equipment not employing vacuum tubes.

ELECTRICAL DEGREE.

1. One 360th part of the angle subtended, at the center of the armature shaft of a rotating machine, by two consecutive filed poles of like polarity.

2. One 360th of a cycle of an alternating current.

ELECTRICAL DISTANCE.

Distance measured in a unit based on the velocity of light.

ELECTRICAL INTERFERENCES.

Interference or electrical disturbance caused by the operation of electrical apparatus other than radio stations. It may be either selective interference (a narrow band of frequencies) or noise (random frequency distribution), usually the latter.

ELECTRICAL INERTIA.

Inductance that opposes any change in current flow through an inductor.

ELECTRICAL LENGTH.

1. Value of an antenna length in free space which will give the same radiation characteristics as a given antenna in a normal location near

the ground. For a $1/2$ wave antenna the electrical length is about 5 percent less than the actual physical length, because of capacitance effects (end effects) at the ends of the antenna wire.

2. Length expressed in wavelengths, or angular units. When expressed in angular units, it is the distance in wavelengths multiplied by 3π to give radians or by 360 degrees to give degrees.

ELECTRICAL LOAD.

Device or circuit component into which power is intended to be delivered by an amplifier, generator, etc.; comprises resistive and/or reactive components.

ELECTRICAL MEASUREMENTS.

Electromotive force, measured in volts.

Current, measured in amperes.

Resistance, measured in ohms.

Inductance, measured in henries.

Impedance, measured in ohms.

Capacitance, measured in farads.

ELECTRICAL MODULATION.

Method in which the carrier is introduced into an electrical modulator, together with the signal currents directly produced by the density changes of the subject facsimile copy.

ELECTRICAL PHONOGRAPH RECORDER.

Electromechanical transducer actuated by power in an electrical system and supplying power to a recording mechanical system, the recorded waves produced by the mechanical system having frequency components corresponding to those in the electrical system.

ELECTRICAL QUARTZ.

Synonymous with oscillator quartz.

ELECTRICAL RESOLVER.

Special type of synchro in which a single winding is put on the stator and two windings whose axes are 90 degrees apart on the rotor.

ELECTRICAL SCANNING.

Scanning by variation of the electrical phases or

amplitudes existing at the primary radiating elements.

ELECTRICAL TRANSCRIPTION.

Recording made in advance of a radio program for broadcast purposes.

ELECTRICAL TWINNING.

Defect occurring in natural quartz crystals, in which adjacent regions of quartz have their electrical axes oppositely poled. Each type of axis is usable but not both in the same plate. During manufacture, the dividing line is marked on the crystal and the regions subsequently separated. (Reference: ORIENTATIONAL TWINNING.)

ELECTRICALLY CONNECTED.

Connected by means of a conducting path or through a resistor, as distinguished from connection merely through electro-magnetic induction.

ELECTRICALLY-POWERED TELEPHONE.

Telephone in which the operating power is obtained either from batteries located at the telephone (local battery) or from a telephone central office (common battery).

ELECTRICIAN.

One who designs, makes, or repairs, electric instruments, machinery etc.; or sets up electrical installations.

ELECTRICITY.

Fundamental quantity in nature consisting of elementary particles: electrons (negative), and positrons (positive).

ELECTRIFICATION.

Process of establishing an excess of positive electricity or negative electricity in a body with respect to a given point.

ELECTROACOUSTIC TRANSDUCER.

Transducer which is actuated by power from an electrical system and supplies power to an acoustical system or vice versa. Loudspeakers and microphones are examples.

ELECTROANALYSIS.

Process of depositing an element or compound upon an electrode by electrolysis for the purpose of determining its quantity in the electrolyte solution.

ELECTROBALLISTICS.

Measurement of the speed of projectiles by electrical or electronic methods.

ELECTROBIOLOGY.

Science dealing with electrical phenomena of living creatures.

ELECTROBIOSCOPY.

Application of a voltage to an animal body to detect signs of life by the production of muscular contractions.

ELECTROCARDIOGRAM.

Photographic or other graphic trace of the manner in which the electric current or voltage associated with the action of heart muscles varies with time. This record is obtained with an electrocardiograph.

ELECTROCARDIOGRAPH.

Instrument for recording the changes in voltage occurring in the human body in synchronism with heart-beats.

ELECTROCAUTERY.

Apparatus for cauterizing tissue.

ELECTROCHEMICAL EQUIVALENT.

Weight of an element, compound, radical, or ion involved in a specified electrochemical reaction during the passage of a specified quantity of electricity as a farad, ampere-hour, or coulomb.

ELECTROCHEMICAL RECORDING.

Facsimile recording by means of a chemical reaction brought about by the passage of signal-controlled current through the sensitized portion of the record sheet.

ELECTROCHEMISTRY.

Branch of science and technology which deals with reciprocal transformations of chemical and electric energy. This includes batteries, electrolysis, electroplating, etc.

ELECTROCOAGULATION.

Coagulation of tissue by means of a high-frequency electrical current.

ELECTROCULTURE.

Stimulation of growth, flowering, or seeding by electrical means.

ELECTRODE.

1. Terminal at which electricity passes from one medium into another.
2. In a vacuum tube, the conducting element that performs one or more of the functions of emitting, collecting, or controlling electrons. Electrodes include cathodes, grids and plates.

ELECTRODE ADMITTANCE.

Quotient of dividing the alternating component of the electrode current by the alternating component of the electrode voltage, all other electrode voltages being maintained constant.

ELECTRODE CAPACITANCE.

Capacitance between one electrode and all the other electrodes connected together.

ELECTRODE CHARACTERISTIC.

Relation, usually shown by a graph, between an electrode voltage and current.

ELECTRODE CONDUCTANCE.

Quotient of the in-phase component of the electrode alternating current by the electrode alternating voltage, all other electrode voltage being maintained constant. This is a variational and not a total conductance.

ELECTRODE CURRENT.

Current passing to or from an electrode.

ELECTRODE DISSIPATION.

Power dissipated in the form of heat by an electrode as a result of electron and/or ion bombardment.

ELECTRODE VOLTAGE OR POTENTIAL.

Voltage between an electrode and the cathode.

ELECTRODEPOSITION.

Process of depositing a substance on an electrode by electrolysis, as in electroplating, electroforming, electro-refining, or electrowinning.

ELECTRODIAGNOSIS.

Determination of the functional condition of various organs and tissues by studying their response to electric stimulation.

ELECTRODISSOLUTION.

Process of dissolving a substance from an electrode by electrolysis.

ELECTRODYNAMIC INSTRUMENT.

Instrument which depends for its operation on the reaction between the current in one or more moving coils and the current in one or more fixed coils.

ELECTRODYNAMIC LOUDSPEAKER.

Dynamic loudspeaker in which the magnetic field is produced by an electromagnet, called the field coil, to which a direct current must be furnished.

ELECTRODYNAMICS.

Branch of physics which deals with the forces and energy transformations related to electric currents and the magnetic fields associated with them.

ELECTRODYNAMOMETER.

Instrument in which the mechanical reactions between two parts of the same circuit are used for detecting or measuring an electric current.

ELECTROENCEPHALOGRAPH.

Instrument for recording the wave forms of voltage developed in the brain.

ELECTROEXTRACTION.

Extraction of metals or compounds from ores and intermediate compounds by electrochemical processes.

ELECTROFORMING.

Production or reproduction of certain articles by electrodeposition.

ELECTROKINETICS.

Branch of physics which deals with electricity in motion.

ELECTROLUMINESCENCE.

Excitation of luminescence by the application of an electrical potential to a crystalline phosphor or the suspension of such a crystal in a changing electric field.

ELECTROLYSIS.

1. Production of chemical changes by means of current through an electrolyte.

2. Destruction of underground structure by chemical action caused by straying electrical currents.

ELECTROLYTE.

Chemical compound either liquid or pastelike, the chemical action of which causes a current flow, or in which a chemical reaction is caused by the flow of a current. Examples of electrolytes are the liquid solution used in storage cells and pastelike compound used in dry cells or in dry electrolytic capacitors.

ELECTROLYTIC CAPACITOR.

Capacitor which is comprised of two plates separated by electrolyte. Under the action of the applied dc voltage, a film of hydrogen gas is formed on one plate, and it is this film which acts as the dielectric. This type of construction makes it possible to concentrate large values of capacitance in a relatively small space.

ELECTROLYTIC CELL.

Unit of a battery which includes the container, two electrodes, and the electrolyte.

ELECTROLYTIC CONDENSER.

Capacitor, usually of large capacity, employing a set of plates immersed in an electrolytic solution. Chemical action forms a very thin dielectric film on the anode plates, insulating them from the electrolyte, which then becomes the other electrode of the capacitor.

ELECTROLYTIC CONDUCTION.

Current flow due to movement of ions in an electrolyte when a voltage is applied between electrodes immersed in an electrolyte.

ELECTROLYTIC COPPER.

Copper obtained by an electrolytic process.

ELECTROLYTIC DEPOSITION.

Electroplating.

ELECTROLYTIC DISSOCIATION.

Process in a solution whereby the molecules are separated into their ions.

ELECTROLYTIC INTERRUPTER.

Device for regularly interrupting an electric current.

ELECTROLYTIC IRON.

Iron obtained by an electrolytic process.

ELECTROLYTIC OXIDATION.

Electrolytic process by which electrons are removed from, or positive charges are added to, an atom or ion. Occurs only at an anode.

ELECTROLYTIC PICKLING.

Removal of oxides or other compounds from a metal surface by passing a current through the metal in an acid solution.

ELECTROLYTIC RECORDING.

Form of electrochemical facsimile recording in which the chemical change is made possible principally by ionization. This is usually done on a chemically moistened paper.

ELECTROLYTIC RECTIFIER.

Rectifier in which rectification of an alternating current is accompanied by electrolytic action.

ELECTROLYTIC REDUCTION.

Electrolytic process by which electrons are added to, or positive charges are removed from an atom or ion. It occurs only at a cathode.

ELECTROLYTIC REFINING.

Refining or purifying metals by electrolytic processes.

ELECTROLYZER.

1. Electrolytic cell for the production of alkali, chlorine, or other allied products.
2. Device used in electrotherapy for reducing urethral stricture with the aid of electricity.

ELECTROMAGNET.

Core of magnetic material, such as soft iron, that becomes temporarily magnetized by the passage of electric current through a coil of wire wound around the core. Current passing through the coil magnetizes the metal and gives it properties of attracting other magnetizable metal masses.

ELECTROMAGNETIC CRACK DETECTOR.

Instrument for detecting the presence of cracks in iron or steel objects.

ELECTROMAGNETIC COUPLING.

Mutual relationship between two wire pairs when the magnetic field of one pair induces a voltage in an adjacent pair.

ELECTROMAGNETIC ENERGY.

Forms of radiant energy, such as radio waves, heat waves, light waves, X-rays, gamma rays, and cosmic rays.

ELECTROMAGNETIC FIELD.

1. Field of influence which an electric current produces around the conductor through which it flows.
2. Rapidly moving electric field and its associated magnetic field located at right angles to both the electric lines of force and to their direction of motion.
3. Magnetic field resulting from the flow of electricity.

ELECTROMAGNETIC HORN.

Horn-shaped structure used for highly directive radiation of radio waves at frequencies of the order of 100 megacycles or higher.

ELECTROMAGNETIC INDUCTION.

Production of a voltage in a coil due to a change in the number of magnetic lines of force (flux linkages) passing through the coil.

ELECTROMAGNETIC LENS.

Electron lens in which focusing is produced electromagnetically.

ELECTROMAGNETIC MIRROR.

Surface or region capable of reflecting radio waves, such as one of the ionized layers in the upper atmospheres.

ELECTROMAGNETIC RADIATION.

Emission of energy in the form of electromagnetic waves. The term is also used to describe the radiated energy.

ELECTROMAGNETIC RELAY.

Electromagnetically operated switch, ordinarily composed of one or more coils which control one or more armatures, each of which actuates electric contacts.

ELECTROMAGNETIC SPECTRUM.

Chart or graph showing the relation of all

known electromagnetic wave forms classified by wavelength.

ELECTROMAGNETIC THEORY OF LIGHT.

Recognition of the identical nature of electromagnetic waves and light.

ELECTROMAGNETIC UNIT.

Electric unit based primarily on the magnetic effect of electric current. The fundamental centimeter-gram-second unit in this system is the abampere.

ELECTROMAGNETIC WAVE.

1. Transverse wave associated with the transmission of electromagnetic energy.
2. Wave produced by the oscillation of an electric charge.
3. Wave in which there are both electric and magnetic displacements. Electromagnetic waves are known as radio waves, heat rays, light rays, X-rays, etc., depending on the frequency.

ELECTROMAGNETICS.

Branch of physics which deals with the mutual relationships existing between electric currents and the attendant magnetic fields.

ELECTROMECHANICAL BELL.

Bell having a prewound spring-driver mechanism, the operation of which is initiated by actuation of an electrical tripping mechanism.

ELECTROMECHANICAL RECORDING.

Facsimile recording by means of a mechanical device, such as a stylus, which is actuated by the signal.

ELECTROMECHANICAL TRANSDUCER.

Transducer for receiving waves from an electric system and delivering waves to a mechanical system, or vice versa.

ELECTROMECHANICS.

Branch of electrical engineering which deals with machines producing or operated by electric currents.

ELECTROMETALLURGY.

Branch of science and technology which deals with the application of electrochemistry to the extraction or treatment of metals.

ELECTROMETER.

Electrical measuring instrument for measuring potential difference; it depends for its action on the force of attraction or repulsion between charged plates or needles. Used to determine the position and polarity of the X-axes in crystal blanks, etc.

ELECTROMETER TUBE.

Vacuum tube designed to amplify extremely small currents.

ELECTROMOTIVE FORCE.

Property which tends to alter the motion of electricity or to maintain its motion against resistance. Difference of electrical potential, or pressure is measured in volts.

ELECTROMOTIVE SERIES.

Arrangement of the metal elements in the order of the amount of electromotive force (voltage) set up between metal and solution when the metal is placed in a normal solution of any of its salts. Each metal is negative to those preceding it in the list, and positive to those succeeding it.

ELECTRON.

1. According to classical theory, an elementary negative charge that revolves around the nucleus of an atom.
2. Elementary unit of a negative electrical charge.
3. Negatively charged particles of matter.
4. Smallest particle of matter. Electrons are emitted by the cathode of an electron tube

ELECTRON AVALANCHE.

Process by which one electron produces many additional electrons by collision.

ELECTRON COUPLING.

Coupling of two circuits inside a vacuum tube; used principally with multigrid tubes. The electron stream between electrodes in one circuit transfers energy to electrodes in the other circuit.

ELECTRON DRIFT.

Actual movement of electrons in a definite direction through a conductor during current flow, as contrasted with transfer of energy from one electron to another by collision.

ELECTRON EMISSION.

1. Liberation of electrons from the surface of a body into space under the influence of heat, light, impact, chemical disintegration, or a potential difference.
2. Release of electrons from a material, as from the cathode of an electron tube.

ELECTRON GUN.

1. Group of electrodes which produce and focus an electron beam of controllable intensity.
2. Portion of a cathode-ray tube or camera tube which emits a beam of controlled electrons. In a kinescope picture tube, these electrons form the scanning beam which produces the visible picture on the luminescent screen.

ELECTRON IMAGE TUBE.

Cathode-ray tube having a photoemissive mosaic, upon which an optical image is projected, and an electron gun to scan the mosaic and convert the optical image into corresponding electronic current.

ELECTRON LENS.

Arrangement of electrodes and/or magnets arranged to produce a predetermined configuration of electrical and magnetic fields so as to focus, deflect, etc., a beam of electrons in much the same manner as a glass lens controls a beam of light.

ELECTRON MICROSCOPE.

Instrument that sends a beam of electrons through a thin sample of the material being examined, magnifies the resulting shadow caused by denser portions of the sample, and makes this shadow visible on a fluorescent screen or records it on photographic film.

ELECTRON MIRROR.

Reflecting electrode in a multiplier-type phototube. (Reference: DYNODE.)

ELECTRON MULTIPLIER.

Vacuum tube in which electrons liberated from a photosensitive cathode are attracted successively to a series of electrodes, called dynodes. Each

electron liberates others (by secondary emission) as it strikes each dynode, causing a great increase, or multiplication, in the number of electrons flowing in the tube.

ELECTRON OPTICS.

Branch of electronics that deals with the control of electron beams by means of electric or magnetic fields.

ELECTRON TELESCOPE.

Apparatus for seeing through haze and fog, in which an infrared image is formed optically on the photoemissive mosaic of an electron image tube and then rendered visible by the tube.

ELECTRON TRANSIT TIME.

Time required for electrons to travel between two electrodes in a vacuum tube. This time is extremely important in tubes designed for ultra-high frequencies.

ELECTRON TUBE.

Vacuum tube in which the motion of electrons is especially important, such as a thermionic, photoelectric, or X-ray tube.

ELECTRON VOLT.

Amount of energy gained by an electron in passing from one point to another that is one volt higher in potential. One electron volt is equal to 1.592×10^{-12} ergs.

ELECTRON-BEAM GENERATOR.

Velocity modulated generator, such as a klystron tube, used to generate extremely high frequencies.

ELECTRON-COUPLED OSCILLATOR.

Oscillation which employs electron coupling between the oscillator and the output or load, using a vacuum tube as the medium for coupling.

ELECTRON-RAY TUBE.

Cathode-ray tuning indicator tube.

ELECTRONIC.

Pertaining to an electron or electronics.

ELECTRONIC AUTOPILOT.

Arrangement of gyroscopes combined with electronic amplifiers and servo motors to detect

deviations in the flight of aircraft and apply the required corrections directly to the control cables of the aircraft.

ELECTRONIC CAMOUFLAGE.

Use of radar absorbent materials to reduce the radar echoing properties of any surface.

ELECTRONIC COMPUTING GUNSIGHT.

Electrical computing device used in connection with an electronic servo system on an aircraft gunsight to provide, automatically, the required offset between the line of sight and the gun. This compensates for such factors as gun elevation and direction, target range, bomber air speed, bomber altitude, relative velocity between bomber and target, and correction for windage and gravity.

ELECTRONIC CONFUSION.

Classified definition. (Reference: AFM 100-50.)

ELECTRONIC CONTROL.

Control of a machine or condition by apparatus using electron tubes. Electronic safety devices are examples of electronic control.

ELECTRONIC COUNTER COUNTERMEASURES.

1. Various tactics used to reduce the effectiveness of electronic countermeasures.
2. Classified definition. (Reference: AFM 100-50.)

ELECTRONIC COUNTERMEASURES.

Major subdivision of the use of electronics involving actions taken to reduce the effectiveness of enemy equipment and/or tactics employing or affected by electromagnetic radiations. (Reference: AFM 100-50.)

ELECTRONIC COUNTERMEASURES OFFICER.

USAF officer who plans airborne electronic intercept operations, determines tactical use of active airborne and ground electronic countermeasures, operates countermeasure equipment, and serves as electronic countermeasures staff officer.

ELECTRONIC COUPLING.

Method of coupling electrical energy from one

circuit to another through the electron stream in a vacuum tube.

ELECTRONIC COVER AND DECEPTION.

Classified definition (Reference: AFM 100-50.)

ELECTRONIC DATA PROCESSING EQUIPMENT.

Equipment used to process the punch card accounting machine cards used in the AMC LOG-COM SYSTEM. The electronic data processing equipment is located at specified centers to process either Air Material Area or Air Force Depot records.

ELECTRONIC DECEPTION.

1. Radiation or reradiation of electromagnetic waves in a manner intended to mislead the enemy in the interpretation of data received by his electronic equipment.
2. Classified definition. (Reference: AFM 100-50.)

ELECTRONIC (ELECTRIC) FILTER.

Selective circuit network designed to pass currents within a continuous band or bands of frequencies, and substantially reduce the amplitude of undesired frequencies. It is composed of an arrangement of electronic parts such as resistors, inductors, capacitors, and quartz crystals.

ELECTRONIC INTELLIGENCE.

Search for, and analysis of, transmitted signals to determine the location or the technical characteristics of a transmitting device. Electronic intelligence is divided into a search or electronic reconnaissance phase and a reduction and dissemination of intelligence phase.

ELECTRONIC JAMMING.

1. Action involved in electronic countermeasures, being the radiation or reradiation of electromagnetic waves to impair the use of a specified segment of the radio spectrum.
2. Classified definition. (Reference: BARRAGE JAMMING, AFM 100-50.)

ELECTRONIC KEYING.

Method of keying in which the keyed circuit is controlled by electron tubes.

ELECTRONIC LINE SCANNING.

Scanning in which the spot moves across the copy by electronic movement of a spot on a cathode-ray tube while the record sheet or subject copy is being moved in a perpendicular direction by mechanical means.

ELECTRONIC PHOTOMETER.

Electronic instrument designed to measure intensity of light, brightness of paints, turbidity of solutions, etc. It comprises a phototube, an electronic direct-current amplifier, and an indicating instrument.

ELECTRONIC PROFILOMETER.

Electronic instrument for measuring surface roughness. The diamond-point stylus of a permanent magnet dynamic pick-up is moved over the surface to be examined, and the resulting varying voltage is amplified, rectified, and measured with a meter calibrated to read directly in microinches of deviation from smoothness.

ELECTRONIC RASTER SCANNING.

Method of scanning, whereby the spot is moved across and also perpendicular to the scanning line by cathode-ray tube sweep circuits. This method is the same as used in television transmission.

ELECTRONIC RECOGNITION AND IDENTIFICATION.

Determination, by electronic means, of the friendly or enemy character, or of the individuality of another, and the identification by electronic means of your own friendly character or own individuality.

ELECTRONIC RECONNAISSANCE.

Search for electromagnetic radiations to determine existence, source and pertinent characteristics for electronics warfare purposes.

ELECTRONIC RECTIFIER.

Rectifier in which rectification of an alternating current is accompanied by the passage of electrons only at the boundary of an electrochemical valve metal and a compound of that metal (as in a copper oxide rectifier or a selenium rectifier) or in an electron tube.

ELECTRONIC SCANNING.

Scanning with an electronic beam as in a cathode-ray tube, as contrasted with mechanical scanning with a rotating disk, prismatic disk, or mirror drum.

ELECTRONIC SEARCH OR RECONNAISSANCE.

Determination of existence, source, and pertinent characteristics of electromagnetic radiations; a passive countermeasure. (Reference: COUNTERMEASURES.)

ELECTRONIC SUPPLY SUPPORT BASE.

Base supplying electronic equipment to radar sites. The major air commands will designate electronic supply support bases as required, and will inform Headquarters, AMC, of the bases so designated.

ELECTRONIC SWITCH.

1. Vacuum tube (or transistor) used as an on and off switching device.
2. Test instrument that is used to present two wave shapes on a single gun cathode-ray tube.

ELECTRONIC TELEVISION.

Television system utilizing cathode-ray tubes to scan the scene at the transmitter and to reconstruct it at the receiver. The process is electrical, with no moving mechanical parts.

ELECTRONIC TIMER.

1. Synchronizer, pulse generator, modulator, or keyer originates a continuous series of identical control pulses, which occur at an exact and unvarying rate of repetition, known as the pulse recurrence frequency.
2. Interval timer using an electronic circuit.

ELECTRONIC TUBE.

Glass or metal envelope, usually highly evacuated, wherein the flow of electrons emitted by a cathode are collected by a positive anode. The flow of electrons may be controlled by one or more grids.

ELECTRONIC TUBES.

Controls the amount, direction, and speed of electrical current. Changes alternating current to direct current or direct current to alternating current; amplifies it into greater power, and changes it into radio or X-rays.

ELECTRONIC VOLTMETER.

Voltage measuring instrument utilizing the characteristics of a vacuum tube (or transistor) for measuring voltages with minimum effect on the circuit to which the instrument is connected. (Reference: VACUUM-TUBE VOLTMETER.)

ELECTRONIC WARFARE.

Electronic warfare is that division of the military use of electronics involving actions taken to prevent or reduce an enemy's effective use of radiated electromagnetic energy, and actions taken to insure our own effective use of radiated electromagnetic energy.

ELECTRONICS.

General term used to describe that branch of electrical science and technology that treats the behavior of electrons in vacuous or gaseous space. Lately extended to include transistors and other semiconductor devices.

ELECTROPHORUS.

Early type of static electricity generator.

ELECTROPLANE CAMERA.

Optical lens system in which one or more of the lens elements are electronically oscillated back and forth to provide greater depth of field than can be obtained by optical means alone. Developed primarily for standard motion picture cameras.

ELECTROPLATE.

Coating of metal placed on a surface by means of electrolysis.

ELECTROPLATING.

Electrodeposition of an adherent coating upon an electrode for the purpose of securing a surface with properties or dimensions different from those of the base metal.

ELECTROREFINING.

Process of dissolving a metal from an impure anode by means of electrodeposition and depositing it in a purer state.

ELECTROSCOPE.

Instrument used for detecting small charges of electricity.

ELECTROSENSITIVE RECORDING.

Type of recording where the record image is produced by passage of electric current into the record sheet.

ELECTROSTATIC.

Pertaining to electricity at rest, such as charges on an object (static electricity).

ELECTROSTATIC CHARGE.

Electric charge stored in a capacitor or on the surface of an insulated object.

ELECTROSTATIC COUPLING.

Coupling by means of capacitance, so that charges on one circuit influence the other circuit through the capacitance.

ELECTROSTATIC DEFLECTION.

Deflecting an electron beam by applying a voltage between plates mounted inside a cathode-ray tube.

ELECTROSTATIC ENERGY STORAGE SPOT WELDER.

Welder, consisting essentially of a capacitor bank that is charged slowly to a predetermined voltage, then discharged suddenly through the material to be welded.

ELECTROSTATIC FIELD.

Field of force (influence) between two electrically charged bodies.

ELECTROSTATIC FOCUS.

Production of a focused electron beam in a cathode-ray tube by the application of an electric field.

ELECTROSTATIC FOCUSING.

Method of focusing an electron stream in which focus is produced through the action of an electric field.

ELECTROSTATIC GENERATOR.

Device for the production of electric charges by electrostatic action.

ELECTROSTATIC INDUCTION.

Process of charging an object electrically by bringing it into the electric field of a charged object.

ELECTROSTATIC MICROPHONE.

Microphone which depends for its operation upon variations of its electrostatic capacitance.

ELECTROSTATIC PRECIPITATOR.

Electronic apparatus for collecting or removing small particles from air by electrostatic means, as in the Precipitron.

ELECTROSTATIC SEPARATOR.

Apparatus in which a finely pulverized mixture of the materials to be separated is allowed to fall in a stream through a powerful electrostatic field produced between two electrodes.

ELECTROSTATIC SHIELD.

Shield used to prevent electrostatic coupling between circuits but which permits electromagnetic coupling.

ELECTROSTATIC UNIT.

Electric unit based primarily on the dynamic interaction of the electric charges. The electrostatic unit charge which, if concentrated upon a small sphere, would repel a similar charge one centimeter distant in a vacuum with a force of one dyne.

ELECTROSTATIC VOLTMETER.

Voltmeter, depending for its action upon electrostatic forces.

ELECTROSTATICS.

Branch of physics which deals with the properties of electricity, which does not depend upon its motion.

ELECTROSTRICTION.

Contraction or expansion of a quartz or other crystal along an electric axis when subjected to an electric field in that direction. (Reference: INVERSE PIEZOELECTRIC EFFECT.)

ELECTROTHERMAL RECORDING.

Type of electrochemical recording, used in facsimile equipment, wherein the chemical change is produced principally by thermal action.

ELECTROTHERMIC INSTRUMENT.

Instrument which depends for its operation on the heating effect of a current.

ELECTROTHERMICS.

Branch of science and technology which deals with the direct transformations of electric energy and heat.

ELECTROTYPE.

Printing plate made by electrolytically depositing copper or nickel in a wax or soft lead impression of the desired printing surface and backing this shell with molten metal. The wax mold is made conductive for electroplating by coating it with graphite. Electrotypes are usually made to secure duplicates of more costly original engravings.

ELECTROTYPING.

Production or reproduction of printing plates by electroforming.

ELECTROWINNING.

Extraction of a metal from its salts by causing a current to flow through a solution of its salts. Often used to separate a metal from its ore.

ELECTRUM.

1. Natural alloy of gold and silver.
2. Plating of German silver.

ELEKTRA.

Radio navigation aid that provides a number of equisignal zones. Elektra becomes Sonne when the equisignal zones are periodically rotated in bearing.

ELEMENT.

1. Substance, in chemistry, that cannot be divided into simpler substances by any means ordinarily available.
2. Radiator, active or parasitic, that helps make up an antenna.
3. Element or finished element is sometimes applied as a synonym of oscillator plate.
4. Element is a component part of an International Morse Character, either a dot or a dash.

MESSAGE KEYING. Part of the key which changes with every message.

PARASITIC. Radiating element, not coupled directly to the feed line of the antenna, which materially affects the pattern of the antenna.

PICTURE. Segment of a scanning line, the dimension of which along the line is exactly equal to the nominal line width.

PIEZOELECTRIC CRYSTAL. Piece of piezoelectric material, cut and finished to a specified geometrical shape and orientation with respect to the crystallographic axes of the material.

RADIATING. Basic subdivision of an antenna which in itself is capable of radiating or receiving radio frequency energy. (Reference: RADIATOR.)

SIGNAL. Part of a signal which occupies the shortest interval of the signaling code. It is considered to be of unit duration building up signal combinations.

ELEMENT OF A FIX.

Specific values of the navigation coordinates necessary to define a position.

ELEMENTAL AREA.

Smallest segment scanned at any given instant in a television or facsimile system. It can be considered a square area having dimensions equal to the width of the scanning line. (Reference: CRITICAL AREA, SCANNING SPOT.)

ELEMENTARY CHARGE.

Natural unit or quantum into which both positive and negative charges appear to be subdivided. It is the charge on a single electron, and its value is about 4.77×10^{-10} electro-static units.

ELEMENTARY LENS EQUATION.

Law giving the quantitative relation between the distance of the object, the image, and the principal focus of the lens.

ELEVATION.

Angular position in a plane perpendicular to the earth's surface. The horizon is usually minimum elevation and the zenith is maximum elevation. It is usually expressed in degrees. This is, the horizon is 0 degrees and the zenith is 90 degrees. It is occasionally expressed in mils, 0 degrees being equal to 0 mils and 90 degrees being equal to 1,600 mils.

ELEVATION ANGLE.

Angle that a radio wave makes with the horizontal.

ELEVATION RESOLUTION.

Minimum angular separation in a vertical plane between two targets at the same range and bearing that will allow an operator to obtain data on either individual target.

ELEVATION ROD.

Vertical position of a conductor in an air terminal by means of which it is elevated above the object that is to be protected.

ELEVATION-POSITION INDICATOR.

Radar display which shows simultaneously angular elevation and slant range of objects detected in the vertical sight plane.

ELIMINATOR.

Device that takes the place of batteries in a radio receiver. It generally consists of a rectifier operating from alternating current.

ELINT (ELECTRONIC INTELLIGENCE).

Information obtained from the analysis of intercepted foreign electronic signals.

ELONGATION.

Extension or elongation of the envelope of a signal due to the delayed arrival of certain of the multipath components.

ELLA.

Airborne propeller-modulation detector and indicator, AN/APX-15. It is used with the AN/APG-15 airborne radar gunsight. Its purpose is to provide an indication to the gunner, when tracking a target with the AN/APG-15 system, as to whether the target is a B-29 or some other aircraft. The basis of identification is the frequency of the propeller modulation of the B-29. The set weighs 15 pounds and requires 75 watts of power. Maximum operating altitude is 40,000 feet. It will give reliable identification up to 200 yards except of aircraft with a 10-second lag in the true identification of a new target after switching from a friendly target. Indication is by means of two paralleled dimmer-type dial lights which are on if the target being tracked is a B-29.

ELLIPTICAL POLARIZATION.

Wave, polarized in such a manner that both the transverse electric and magnetic fields have unequal components, at right angles to each other, that are not in time phase. The electric vector at right angles to the direction of propagation rotates, with its magnitude changing, while in rotation.

ELLIPTICALLY POLARIZED WAVE.

Wave for which the electric intensity vector at a point describes an ellipse.

ELSEC.

Classified definition. (Reference: AFM 100-50.)

EMANATION.

Gaseous radioactive products formed by the expulsion of an alpha particle from radium thorium X, or actinium X. Now known as radon, thoron, and actinon, respectively.

emb (EMBASSY).

Residence or office of an ambassador.

EMBARKATION AREA.

Area ashore, including a group of embarkation points, in which final preparations for embarkation are completed and through which assigned loads for craft and ships are called forward to embark.

EMBASSY.

Residence or office of an ambassador.

EMBOSSED GROOVE RECORDING.

Method of recording vocal sounds on disks or film strips by embossing sound grooves with a relatively blunt stylus, rather than by cutting grooves with a sharp stylus. Embossing throws the material up in furrows on each side of the sound groove, without removing any material.

EMC (ENGINEERED MILITARY CIRCUIT).

Leased long lines established in the ConUS for which only the station equipment, local loops, and reserved portions of interexchange channels are continuously paid for. The unreserved portions of leased long line or interexchange channels are placed on a standby status by the commercial communications company, and they are

placed in an actual operational status and paid for only when required by the command concerned.

EMCCC (EUROPEAN MILITARY COMMUNICATIONS COORDINATING COMMITTEE).

EMERGENCY.

Message precedence designation. (Reference: PRECEDENCE DESIGNATIONS.)

EMERGENCY COMMUNICATION.

Transmission or reception of distress, alarm, urgent, or safety signals, or messages relating thereto or any matter relating to the safety of life or property, or occasional operation of equipment for determining whether or not the radio installation is in good working condition.

EMERGENCY DESTRUCTION.

Destruction of classified documents and material under emergency conditions, in accordance with standing instructions from proper authority, to prevent them from falling into unauthorized hands. The usual occasion for emergency destruction is when capture is imminent.

EMERGENCY-OFF.

Control not normally intended to turn off system power.

EMERGENCY RADIO CHANNEL.

Radio frequency reserved for emergency use, particularly for distress signals.

EMERGENCY RECEIVER.

Receiver immediately available in a ship station for emergency communication and capable of being energized solely by a self-contained or emergency power supply.

EMERGENCY SERVICE.

Radio communication service carrier for emergency purposes.

EMERGENCY SWITCH.

Switch located ahead of meters in some buildings for the purpose of cutting off all electrical power in case of a fire or other emergency.

EMERGENT NODAL POINT.

Node, usually assumed to be a voltage node, having zero potential with respect to ground. (Reference: NODAL POINT.)

EMERGENT RAY.

Term applied to a ray of light, in optics, leaving a dense medium as contrasted with the entering or incident ray.

EMF (ELECTROMOTIVE FORCE).

Force causing a flow of current. Measured in volts.

EMISSION.

1. Radio waves radiated into space by a radio transmitter.
2. Process of ejecting electrons from the surface of a material under the influence of heat, radiation, or other causes.

ELECTRON. Liberation of electrons from the surface of a body, under the influence of heat, light, impact, chemical disintegration, or potential difference.

PHOTOELECTRIC. Emission of electrons from certain materials when exposed to light.

SECONDARY. 1. Electron emission which is the direct result of the impact of electrons against a surface.

2. Liberation of electrons from an element within the tube other than the cathode, due to impact of electrons traveling from the cathode to some other element at a higher potential.

THERMIONIC. 1. Electron emission from a solid body as a result of its elevated temperature.

2. Liberation of electrons due to the temperature rise of a cathode alone, independent of any other electrodes within the tube.

EMISSION CHARACTERISTIC.

Relation, usually shown by a graph between the emission and a factor controlling the emission (as temperature, voltage, or current of the filament.)

EMISSION CURRENT.

Current produced in the plate circuit of a tube

when all of the electrons emitted by the cathode pass to the plate. (Reference: SATURATION CURRENT.)

EMISSOIN SPECTRUM.

Spectrum showing the radiation emitted by a substance, such as the spectrum of light emitted when a metal is placed in an electric arc or of light emitted by an incandescent filament.

EMISSIVE POWER.

Line rate of emission of radiant energy in all directions per unit surface area of a radiating body at a given temperature. (Reference: RADIATING POWER.)

EML (EQUIPMENT MODIFICATION LIST).

List of changes by addition, deletion, or substitution in the equipment section of a table of organization and equipment.

EMMETROPIA.

Normal refractive condition of the eyes.

EMMETROPIC.

Normal eye.

EMN (EQUIPMENT MANUFACTURERS NUMBERS).

EMPHASIZER.

Circuit or device that intentionally increases signal strength at certain audio frequencies.

EMPIRE CLOTH.

Cotton or linen cloth coated with linseed oil, used for insulating coils and other parts of electrical equipment.

EMPIRICAL.

Based on actual measurement, observation, or experience as opposed to theoretical determinations.

EMULSION.

Suspension of a light-sensitive silver salt, especially silver chloride or silver bromide, in a colloidal medium, usually gelatin, used for coating photographic films, plates, or papers.

ENCA (EUROPEAN NAVAL COMMUNICATIONS AGENCY).

EN ROUTE RADAR CONTROL.

Portion of the long-range radar operation that applies to the positive fixing and/or control of aircraft operating between two terminal areas.

ENABLING PULSE.

Pulse which opens a normally closed electrical gate, or otherwise permits an operation for which it is necessary but not sufficient condition.

ENAMELED WIRE.

Wire coated with an insulating layer of baked enamel.

ENANTIOMORPHIC.

Term applied to certain classes of crystals that occur in two forms, in one of which the external faces on all internal properties are the mirror image of those in the other. Quartz and Rochelle salts are examples. For quartz, the two forms are called right-quartz and left-quartz.

ENCHANCED MULTISPOT NOISE.

Classified definition. (Reference: AFM 100-50.)

ENCIPHER.

Convert a plain text message into unintelligible language by means of a cipher system.

ENCIPHERED FACSIMILE COMMUNICATIONS.

Communications in which security is accomplished by mixing pulses of key, produced by a key generator with the output of the facsimile converter. Plain text is recovered by subtracting the identical key at the receive terminal. Unauthorized listeners are unable to reconstruct the plain text unless they have an identical key generator and the daily key setting.

ENCLOSED VENTILATED APPARATUS.

Apparatus totally enclosed except that openings are provided for the admission and discharge of cooling air.

ENCODE.

1. Convert a plain text message into its coded form.
2. Section of a code book in which the plain text equivalents of the code groups are in alphabetical, numerical or other systematic order.

ENCODER.

Network or system, in an electronic computer, in which only one input is excited at a time and each input produces a combination of outputs. (Reference: MATRIX.)

ENCRYPT.

Convert a plain text message into disguised form.

ENCRYPTED MESSAGE PART.

Portion of a long message which is sent as a separate complete message with its own date-time group, station serial number, and group count.

END DISTORTION.

End distortion of start-stop teletypewriter signals is the shifting of the end of all marking pulses from their proper positions in relation to the beginning of the start pulse.

END EFFECT.

Effect of capacitance at the ends of an antenna. It requires that the actual length of a half-wave antenna is about five percent less than half a wave length, with this percentage increasing to about six percent at frequencies above 50 megacycles.

END FACES.

Loosely applied to the terminal rhombohedral faces on quartz crystals.

END INSTRUMENT.

Device which is connected to one terminal of a loop and is capable of converting usable intelligence into electrical signals, or vice-versa. It includes all generating, signal converting, and loop-terminating devices employed at the transmitting and/or receiving location.

END ITEM.

Final combination of end products, components, parts, an/or materials which is ready for its intended use, such as a ship, tank, mobile machine shop, or airplane.

END PLAY.

Movement of a shaft along its axis. A type of lost motion common to worm and wormwheel assemblies. The error lies in looseness in the bearings at the ends of the shaft or in the ball cap

and socket. The result is that the worm can be rotated a small amount without causing rotation of the wormwheel.

END SECTION OR HEAD SECTION.

Additional position of switchboard added to each end of a large multiple switchboard and used to extend some of the trunks and/or locals to these end positions in order to place all jacks within easy reach of the first and last operator. These end positions normally contain no cords or keys and are not in themselves used as operating positions.

END-AROUND CARRY.

(Reference: CARRY.)

END-CELL.

Group of cells in series with the central office storage battery, which can be switched in to maintain the output voltage of the battery when it is not being charged.

END-FIRE ARRAY.

Antenna array whose direction of maximum radiation is along the axis of the array.

END-OF-TRANSMISSION.

Name given to the last card of a deck of punch card accounting machine cards used in the AMC LOGCOM SYSTEM including a header card and one or more detail cards. The end-of-transmission card is used to signal the end of a transmission and contains the same information as the header card, plus additional data for traffic analysis.

END-ON DIRECTIONAL ANTENNA.

End-fire array.

ENDING.

Part of a message containing all components following the text.

ENDODYNE RECEPTION.

British term applying to reception of unmodulated code signals with a vacuum-tube circuit having a local oscillator differing slightly in frequency from the carrier signal and thus producing a beat signal in the audio range. (Reference: AUTODYNE RECEPTION.)

ENEMY AIRCRAFT.

Hostile aircraft.

ENERGIZE.

Supply power necessary to provide normal and effective operation (such as with transmitters, receivers, relays, and other equipment).

ENERGIZED.

Connected to a power source in operating condition.

ENERGY.

Capacity for performing work. Energy due to the motion of a piece of matter is called kinetic energy. Energy due to the position of a piece of matter is called potential energy. Energy may be transferred from one form to another, but it cannot be created or destroyed.

ENERGY LEVEL DIAGRAM.

Line drawing that shows increases and decreases of electrical power as current intensities rise and fall along a channel of signal communications.

ENERGY PRODUCT CURVE.

Curve obtained by plotting the product of the values of magnetic induction B and demagnetizing force H for each point on the demagnetization curve of a permanent magnet material. Usually shown with the demagnetization curve.

ENG (ENGINEERING).

Art and science of making the properties of matter and sources of power useful to man in machines, structures, and products. Engineering has many branches, some of which are electrical, electronic, mechanical, civil, illuminating, chemical, industrial, and automotive.

ENG (ENGAGE).

Term in air defense, used to indicate that anti-aircraft weapons have been assigned to, or are actively firing at, a designated target.

ENGINE.

Machine which produces power to do work, particularly one that converts heat into mechanical power; the term engine should be used in referring to the power plant of a craft, and the term motor should be used in connection with electric devices.

ENGINE-DRIVEN GENERATOR.

Generator, deriving its power from a gear or belt connection to an engine.

ENGINEERED BILL OF MATERIAL.

Bill of material, based on a standard facility equipment list, modified to list the specific amounts of incidental materials required for the installation of a specific facility.

ENGINEERED MILITARY CHANNEL.

Circuit or channel leased from a commercial company and used by the military when required. Normally, the interexchange portion of the leased circuit is used by the commercial company until the military requires its use. The local loop is continuously paid for while the whole circuit is paid for when placed in actual operation.

ENGINEERED MILITARY CIRCUIT.

Circuit or channel leased from a commercial company and used by the military when required. Normally the interexchange portion of the leased circuit is used by the commercial company until the military requires its use. The local loop is continuously paid for while the whole circuit is paid for when placed in actual operation.

ENGINEERING.

Art and science of making the properties of matter and source of power useful to man in machines, structures, and products. Engineering has many branches, some of which are electrical, electronic, mechanical, civil, illuminating, chemical, industrial, and automotive.

ENGINEERING CHANNEL.

Auxiliary circuit or channel (radio or wire) for use by operating and/or maintenance personnel for communications incident to the establishment, operation, maintenance, and control of communication facilities. (An engineering maintenance circuit includes the functions of an order wire).

ENGINEERING CIRCUIT.

1. Auxiliary circuit or channel (radio or wire)

for use by operating and/or maintenance personnel for communications incident to the establishment, operation, maintenance and control of communication facilities. (An engineering maintenance circuit includes the functions of an order wire.)

2. Leased long lines established in the zone of interior for which only the local loops are continuously paid for. The leased long line or interexchange portion of the current is placed on a standby status by the commercial communications company and is placed in an actual operational status and paid for only when required by the command concerned.

ENGINEERING REVIEW ACTIVITY.

Single, centrally located activity manned with qualified communication-electronics engineers capable of establishing installation standards and reviewing communications-electronic schemes for fixed communications-electronic facilities. One activity is located within Airways and Air Communications Service and another within the Air Materiel Command.

ENTROPY.

Entropy associated with an isolated physical system has the characteristic property that, as the system spontaneously settles into a final, steady state, the entropy approaches a maximum. It may be regarded as a measure of the degree in which the energy of the system is unavailable.

ENVELOPE.

1. Glass or metal housing of a vacuum tube.
2. Curve drawn to pass through the peaks of a graph showing the wave form of a modulated radio-frequency carrier signal.

ENVELOPE DELAY.

Time, which elapses between the instants at which any designated point of a transmitted wave passes any two points of a transmission circuit between which the delay is measured or specified. Such delay is primarily determined by the constants of the circuit, and is measurable in milliseconds or microseconds.

EO (EXECUTIVE ORDER).

Rule or regulation having the force of law, issued by the President with congressional authorization.

EODP (ENGINEERING ORDER RELAYED FOR PARTS REQUISITION).

EOT (END-OF-TRANSMISSION.)

Name given to the last card of a deck of punch card accounting machine cards used in the AMC LOGCOM system including a header card and one of more detail cards. The end-of-transmission card is used to signal the end of a transmission and contains the same information as the header card, plus additional data for traffic analysis.

EPSILON.

Greek letters E (lower case as e) frequently used to represent the number 2.71828, which is the base of the natural system of logarithms.

eqp (EQUIPMENT).

1. Articles needed to outfit an individual or organization. The term applies to clothing, tools, utensils, vehicles, weapons, and other similar items.
2. General term meaning telephone apparatus, either in general or particular. Plant is more inclusive in that it includes material used both in and outdoors. Equipment usually means apparatus used indoors or otherwise sheltered.

EQUAL-AREA PROJECTION.

Map projection which preserves the ratios of area constant; that is, any given part of the map bears the same relation to the area of the whole map as any other part representing an equal area on the surface of the earth.

EQUALIZATION.

Process by which attenuation is rendered constant over a band of frequencies even though the equipment of transmission medium has losses that vary with frequency. This is usually accomplished by introducing attenuation in inverse proportion to the attenuation characteristics of the equipment or line.

EQUALIZER.

1. Network having an attenuation complementary to that of a telephone line, and inserted for the purpose of correcting frequency distortion caused by the line.
2. Network which improves the frequency response of a radio system. Usually a combination of resistors, inductors, and capacitors. (Reference: DELAY EQUALIZER.)

EQUALIZING CURRENT.

Current that circulates between two parallel-connected compound generators to equalize their output.

EQUALIZING NETWORK.

Network connected to a line to correct or control its transmission frequency characteristics.

EQUALIZING PULSES.

Equalizing pulses, in television, are pulses at twice the line frequency, occurring just before and after the vertical synchronizing pulses, which minimize the effect of line frequency pulses on the interlace.

EQUATOR.

Great circle of a sphere, in a system of polar or spherical coordinates, cut by a plane that passes through the center of the sphere and is perpendicular to the polar axis.

EQUILIBRIUM ELECTRODE POTENTIAL.

Static electrode potential that is measured when the electrode and electrolyte are in equilibrium with respect to a specified electrochemical reaction.

EQUILIBRIUM REACTION POTENTIAL.

Minimum voltage at which an electrochemical reaction can take place. It is equal to the algebraic difference of the equilibrium potentials of the anode and cathode with respect to the specified reaction.

EQUINOXES.

Periods of the year when the apparent path of the sun crosses the equator.

EQUIP (EQUIPMENT).

1. Articles needed to outfit an individual or organization. The term refers to clothing, tools,

utensils, vehicles, weapons, and other similar items.

2. General term meaning telephone apparatus, either in general or particular. Plant is more inclusive in that it includes material used both in and outdoors. Equipment usually means apparatus used indoors or otherwise sheltered.

CENTRAL OFFICE. Apparatus located in a central office.

FIELD SUPPORT. Equipment required, in addition to unit essential equipment and base support equipment, to perform the assigned mission under combat conditions. Normally, all requirements for field support equipment will be confined to organizations outside the ConUS.

GROUND SUPPORT. Implements or devices which are required to repair, overhaul, assemble, disassemble, test, inspect, handle, and/or otherwise maintain an airplane or its components; includes those vehicles and items of equipment used to refuel, service, tow, and provide an auxiliary source of electric power for aircraft.

HIGH PERFORMANCE. Equipment having characteristics sufficiently exacting to permit their use in trunk or link circuits.

HOUSEKEEPING. Items listed in Tables of Allowances which are required for the shelter, health, welfare, and administration of personnel and which are issued on memorandum receipt to users with property responsibility remaining with the base supply officer.

INDIVIDUAL. Referring to the method of use, in Army and Air Force usage, signifies personal clothing and equipment for the personal use of a soldier or airman.

INSTALLED. Nonexpendable equipment permanently attached or integrated to real property in such a manner that it cannot be removed without causing substantial physical damage or change to the real property.

LINE. Line relay and bridge cut-off relay which are sometimes combined in one relay.

LOW PERFORMANCE. Equipment having characteristics insufficiently exacting to permit their use in trunk or line circuits; may be employed in loop circuits whenever they meet loop circuit requirements.

ORGANIZATIONAL. Referring to method of use, in Army and Air Force usage, signifies that equipment, other than individual equipment which is used in furtherance of the common mission of an organization or unit.

REMOTE-CONTROL. Apparatus which is used for performing a prescribed function or functions at a distance by electrical means.

SPECIAL. Equipment not authorized, in Army and Air Force usage, in standard equipment publications but determined as essential in connection with a contemplated operation, function, or mission.

STATION. Equipment used on a subscriber's premises.

SUBSCRIBER'S. Subscriber's equipment, in protective signaling, is that portion of a system installed in the protected premises or otherwise supervised.

TERMINAL. 1. Communications equipment at the end of a communications channel which is essential to the transmitting and/or receiving operator for controlling the transmission and/or reception of messages or intelligence.

2. Telephone and teletypewriter switchboards and other centrally located equipment at which wire circuits are terminated.

EQUIPHASE ZONE.

Region in space within which the difference in phase of two radio signals is indistinguishable.

EQUIPMENT CABINET.

Case designed to house relays and other apparatus.

EQUIPMENT COMPONENT LIST.

Publication prescribing the kits and sets of tools or equipment needed by an individual, activity, or organization to perform a specific duty or function.

EQUIPMENT COMPONENT LIST KIT.

Basic assemblage of tools, complete with carrying case, utilized by an individual in accomplishing his normal duties.

EQUIPMENT COMPONENT LIST SET.

Assemblage of equipment required by an activity or organization to perform a particular function.

EQUIPMENT DRAWING.

Drawing which illustrates the assembly of frameworks, cabinets, relay racks, etc.

EQUIPMENT MODIFICATION LIST.

List of changes by addition, deletion, or substitution in the equipment section of a table of organization and equipment.

EQUIPOTENTIAL.

1. Having the same potential at all points.
2. Conductor with all its parts at a single potential. The cathode of a heater-type tube is equipotential, whereas the voltage of a filament varies from one end to the other.

EQUIPOTENTIAL CATHODE.

Cathode to which heat is supplied by an independent heater element in a thermionic tube. (Reference: INDIRECTLY HEATED CATHODE, UNIPOTENTIAL CATHODE.)

EQUIPOTENTIAL LINE.

Imaginary line in space, having the same potential at all points.

EQUIPOTENTIAL SURFACE.

Imaginary surface in space, on which all points have the same potential.

EQUISIGNAL RADIO RANGE BEACON

Radio range beacon that transmits two distinctive signals which may be received with equal intensity only in certain directions called equisignal sectors. Used for aircraft guidance.

EQUISIGNAL SECTOR.

Region in which two distinctive signals from an equisignal range beacon are received with equal intensity.

EQUISIGNAL SURFACE.

Surface around an antenna formed by all points

at which, for transmission, the field strength (usually measured in volts per meter) is constant.

EQUISIGNAL ZONE.

Region in space within which the difference in amplitude of two radio signals (usually emitted by a single station) is indistinguishable.

EQUIVALENT ABSORPTION.

Area of perfectly absorbing surface that will absorb sound energy at the same rate as the given object under the same conditions. The acoustic unit of equivalent absorption is the sabin.

EQUIVALENT CIRCUIT.

Disgrammatic arrangement of coils, resistors, and capacitors, representing the effects of a more complicated circuit in order to permit easier analysis.

EQUIVALENT FOUR-WIRE SYSTEM.

Term applied to a carrier on a repeater system using only one pair of wires but different frequencies for each direction of transmission.

EQUIVALENT HEIGHT.

Virtual height of an ionized layer of the ionosphere.

EQUIVALENT LOUDNESS (LOUDNESS LEVEL, EQUIVALENT LOUDNESS LEVEL).

Equivalent loudness of a sound is the intensity level, relative to some arbitrary reference intensity, of the 1,000-cycle pure tone which is judged by the listeners to be equivalent in loudness.

EQUIVALENT NETWORK.

Network which, under certain conditions of use, may replace another network without substantial effect on electrical performance. If one network can replace another in any system whatsoever, without causing any change in the operation of the system, the network is said to be a network of general equivalence. If one network can replace another network only in a particular system without causing any change in the operation of the system, it is said to be a network of limited equivalence.

EQUIVALENT NOISE TEMPERATURE.

Absolute temperature at which a perfect re-

sistor, of equal resistance to the component, would generate the same noise as does the component at room temperature.

EQUIVALENT RESISTANCE.

Concentrated or lumped resistance that would cause the same power loss as the actual small resistance values distributed throughout a circuit.

ERFA. (EUROPEAN RADIO FREQUENCY AGENCY).

ERG.

Absolute centimeter-gram-second unit of energy and work. It is the work done when a force of one dyne is applied through a distance of one centimeter. One foot-pound is equal to 13,560,000 ergs.

ERROR.

1. Difference between the true value and a calculated or observed value. A quantity (equal in absolute magnitude to the error) added to a calculated or observed value to obtain the true value is called a correction.

2. Incorrect step, process, or result in a computer or data processing system. In addition to the mathematical usage, in the computer field the term is also commonly used to refer to machine malfunctions as machine errors and to human mistakes as human errors. It is frequently helpful to distinguish between these as follows: Errors result from approximations used in numerical methods; mistakes result from incorrect programming, coding, dated transcription, manual operation, etc; malfunctions result from failures in the operation of machine components such as gates, flip-flops, amplifiers, etc. (Reference: CORRECTION.)

TRANSPOSITION. Error, in cryptography, arising from the exchange of position of textual elements without a change in their identities.

ZERO. Delay time occurring within the transmitter and receiver circuits of a radar system. For accurate range data, this delay time must be compensated for in the calibration of the range unit.

ERROR SIGNAL.

Signal, in an automatic control device, whose magnitude and sign are used to correct the alignment between the controlling and the controlled elements.

ERROR-DETECTING CODE.

(Reference: CHECK, FORBIDDEN-COMBINATION.)

ESCAPE VELOCITY.

Velocity at which an object would escape the gravitational attraction of a given astronomical body. The escape velocity of the earth is 6.664 miles per second.

ESCORT.

1. Airplane or airplanes flying, or assigned to fly as protection to other aircraft.
2. Action of such flying, or the protection given by it.
3. To accompany other aircraft or vessels as protection.

ESCUTCHEON.

Ornamental metal, wood, plastic, or other framework used around a radio tuning dial, control knob, or other panel-mounted part in a radio receiver, television receiver, audio-frequency amplifier or other equipment. A backing plate around an opening.

ESSENTIAL ELEMENTS OF INFORMATION.

Statement of the additional data regarding the enemy, terrain not under control, or meteorological or hydrographic conditions, which must be collected and processed in order to enable a commander to make a sound decision as to a course of action, conduct a maneuver, avoid surprise, or formulate details of a plan of operations. The essential elements are usually enunciated in the form of questions posed for the purpose of focusing the attention and activities of all collecting agencies on the high-priority information is needed at a particular time.

EST (EASTERN STANDARD TIME).

Mean time based on the 75th meridian, west longitude.

ESTABLISHED.

Term used in air defense operations. Any track (except tentative) whose estimated position and velocity are computed from radar data. This status exists after initiation (either automatic or manual).

ESTABLISHMENT.

Installation, together with its personnel and equipment, organized as an operating entity.

ESTIMATE OF THE SITUATION.

Logical process of reasoning by which a commander considers all the circumstances affecting the military situation and arrives at a decision as to a course of action to be taken in order to accomplish his mission.

ESTIMATED TIME ENROUTE.

Assumed time, in air navigation, of time spent by an aircraft from departure point to destination, based on ground speed.

ESTIMATED TIME OF ARRIVAL.

Assumed time, in air navigation, of arrival at a destination, based on ground speed.

ESTIMATED TIME OF DEPARTURE.

Assumed time of aircraft departure from a given destination, based on the estimated time of arrival.

ESTIMATED TIME OF RETURN.

Assumed time, in air navigation, of time spent by an aircraft from departure point, to destination, and return to departure point, based on ground speed.

ET (CUT).

Crystal oscillator plate of specified dimensions with an edge parallel to X and the angle Z to Z = +66°30'.

ETA (ESTIMATED TIME OF ARRIVAL).

Assumed time, in air navigation, of arrival at a destination, based on ground speed.

ETCH FIGURE.

Minute pit or hillock formed by the dissolving action of hydrofluoric acid on a natural or artificial surface of a quartz crystal.

ETCHING.

1. Marking of a surface by acid, acid fumes, or a tool. Process extensively used in the manufacture of reticles.
2. Process by which a flat ground surface or natural crystal face is superficially dissolved by hydrofluoric acid.

ETCHING TO FREQUENCY.

Finishing a crystal blank to its final frequency by etching in hydrofluoric acid salt.

ETD (ESTIMATED TIME OF DEPARTURE).

Assumed time of aircraft departure from a given destination, based on the estimated time of arrival.

ETE (ESTIMATED TIME ENROUTE).

Assumed time, in air navigation, of time spent by an aircraft from departure point to destination, based on ground speed.

ETHER (ANTHER).

Hypothetical nonmaterial medium that has been supposed to pervade all space (including vacuum) and all matter and was assumed as the vehicle of propagation of electromagnetic radiations.

ETR (ESTIMATED TIME OF RETURN).

Assumed time, in air navigation, of time spent by an aircraft from departure point, to destination, and return to departure point, based on ground speed.

EuM (EUROPEAN-MEDITERRANEAN).

EUREKA.

Ground beacon of the British REBECCA-EUREKA navigation system.

EUROPEAN COORDINATING COMMITTEE.

Consists of United States Representative to Council of Deputies as Chairman, United States Military Representatives for Europe.

EUROPEAN RADIO FREQUENCY AGENCY.

Coordinates and recommends frequency assignments to the Chief Signal Officer, SHAPE.

EUROPIUM.

Metallic element, atomic No. 63.

evac (EVACUATION).

1. Withdrawal or removal, or the act of withdrawing or removing, personnel or equipment from an area or place, especially in an emergency.
2. In radar, an Air Defense Early Warning Station.

EVALUATION.

General term applied to the detection, tracking, and performance of radar stations and/or systems comparing the measured values with known references; or recommending new references where necessary.

EVASION.

Tactics that are designed to take advantage of the limitations of radar to prevent or postpone radar detection, or to avoid revealing the true position of an attacking force.

EW (EARLY WARNING).

Warning system near the outer boundaries of a defended area to warn of approaching airborne objects.

EX (EXPERIMENTAL STATION).

ITU designation for experimental station.

EXALTED-CARRIER RECEIVER.

Receiver that counteracts selective fading by maintaining the carrier at a high level at all times. This minimizes the second harmonic distortion that would otherwise occur when the carrier drops out while leaving most of the sidebands at their normal amplitudes. The receiver may have a local oscillator operating at the frequency of the incoming carrier, or may amplify the incoming carrier separately and recombine it with the sidebands.

EXALTED-CARRIER RECEPTION.

Method of receiving either amplitude or phase-modulated signals in which the carrier is separated from the sidebands, filtered, amplified, and then combined with the sidebands again at a higher level prior to demodulation.

EXCESS PROPERTY.

Quantity of property in possession of any component of the Department of Defense which exceeds the quantity required or authorized for retention by that component.

EXCESS SOUND PRESSURE.

Total instantaneous pressure at a point in a medium containing sound waves, minus the static pressure that exists when no sound waves are present. The unit is the dyne per square centimeter. (Reference: INSTANTANEOUS SOUND PRESSURE.)

EXCESS-THREE CODE.

Number code, in an electronic computer, in which the decimal digit n is represented by the four-bit binary equivalent of $n + 3$. (Reference: BINARY-CODED-DECIMAL SYSTEM.)

EXCHANGE.

1. Room or building equipped so that telephone lines terminating there may be interconnected as required. The equipment may include a switchboard or automatic switching apparatus.

2. Air Defense term which is a manual action taken on two established tracks by which the positions are interchanged.

ALL-RELAY. Exchange where all switching is done by relay equipment.

AUTOMATIC. Exchange at which communication between subscribers is effective without the intervention of an operator, by means of switches set in motion by the operation of a dial on the originating subscriber's instrument.

CENTRAL BATTERY. Manual exchange that provides, from a battery situated at the exchange, the current needed for operating supervisory signals and subscribers' calling signals and also the current required to enable a subscriber to speak over his line.

CENTRAL BATTERY SIGNALING. Manual exchange that provides, from a battery situated at the exchange, the current needed for operating supervisory signals and subscribers' cal-

ling signals but not the current required to enable subscribers to speak over their lines, the latter being provided by the local batteries installed at the subscribers' premises or by dry cells in the telephone.

MAGNETO SWITCHBOARD.

(Reference: SWITCHBOARD, MAGNETO.)

MANUAL. Exchange in which the lines are connected to a switchboard and controlled by an operator.

MULTIOFFICE. Exchange served by more than one local central office.

PRIVATE. Telephone exchange serving a single organization and having no means for connection with a public telephone exchange.

PRIVATE AUTOMATIC. Private exchange, operated mechanically, not connected with the public telephone system.

PRIVATE AUTOMATIC BRANCH. Private branch exchange in which connections are made by remotely controlled switches.

PRIVATE BRANCH. Switchboard, or automatic apparatus, installed at a headquarters or establishment to provide facilities for making outside calls and for intercommunication for all subscribers at the headquarters or establishment.

ROTARY. Exchange where switching is done by rotary equipment.

SINGLE-OFFICE. Exchange served by a single central office.

TOLL. Toll office where customer's calls are connected to toll circuits or toll circuits are interconnected. An exchange where toll or long-distance connections are made.

TRUNK. Exchange primarily devoted to handling trunk calls.

EXCHANGE AREA.

Portion or area served by one complete local telephone system.

EXCHANGE AREAS.

Areas set up for administrative reasons for telephone service covered by a single rate basis. Usually a single city or large division of town or village.

EXCHANGE CABLE.

Lead covered, nonquadded, paper-insulated cable used within a given area to provide cable pairs between local subscribers and a central office.

EXCHANGE LINE.

Line joining a subscriber or switchboard to a civil exchange.

EXCHANGE PLANT.

Plant used to serve subscriber's needs as distinguished from that used for long distance communication.

EXCITATION.

Electrical energy which, when applied to a device, causes that device to produce an effect. Examples of excitation are the RF voltage applied to a central grid of a vacuum tube, RF voltage applied to an oscillating crystal, RF impulses applied to a tuned circuit, and the voltage applied to the field winding of a dynamotor.

EXCITATION VOLTAGE.

Nominal voltage required for excitation of a circuit.

EXCITED FIELD LOUDSPEAKER.

Loudspeaker in which the steady magnetic field is produced by an electromagnet.

EXCITER.

1. Part of a directional transmitting antenna system which is directly connected to this source of power, as to the transmitter.
2. Crystal oscillator or self-excited oscillator that generates the carrier frequency of a transmitter.
3. Small auxiliary generator that provides field current for an ac generator.

EXCITER LAMP.

1. Intensity bright incandescent lamp having a concentrated filament, used in variable-area sound-on-film recording and in reproducing all

types of sound tracks on film, as well as in some mechanical television systems.

2. Light source used in a facsimile transmitter to illuminate the subject copy for scanning purposes.

EXCITING CURRENT OF A TRANSFORMER.

Current that flows in any winding used to excite the transformer when all other windings are open-circuited, and is usually expressed in per cent of the rated current of the winding in which it is measured.

EXCLUSIVE.

Term used in the text of messages to indicate that messages so marked are to be delivered only to the person(s) whose name(s) or designation(s) appears immediately following the word exclusive, or in the absence of the person(s) so addressed, to his authorized representative. Such messages must be handled only by specially designated personnel and must be classified.

EXECUTIVE METHOD.

Method by which the transmitting station directs the addressees of a message to execute (take action on) its purport at a given moment.

EXECUTIVE ORDER.

Rule or regulation having the force of law, issued by the President with congressional authorization.

EXECUTIVE SIGNAL.

Transmission which indicates the instant at which messages are to be executed.

EXEMPTED ADDRESSEE.

Addressee included in the collective address designation of a message not intended for action or information.

EXERCISE.

Military maneuver, drill, or operation carried out for training and discipline.

EXHAUST PYROMETER.

Instrument to measure temperature of the exhaust, by the small electrical current developed at the junction of two dissimilar metals when exposed to heat.

EXHAUSTION.

Removal of gases from a space such as the bulb of a vacuum tube, by means of vacuum pumps.

EXOSPHERE.

Outermost region of the earth's atmosphere, where atoms and molecules move in dynamic orbits under the action of the gravitational field.

EXPAND.

1. Spread out part or all the trace of a cathode-ray display.
2. Increase in size.

EXPANDED SCOPE.

Magnified portion of a given type of cathode-ray tube presentation.

EXPANDED SWEEP.

1. Sweep in which the movement of the electron beam across the screen is speeded up during a selected portion of the sweep time. (Reference: R-INDICATOR.)
2. Range scale, in fire control radar, shorter than the longest scale provided, but extending from zero range rather than having its part delayed, as the precision sweep is. (Reference: PRECISION SWEEP.)

EXPANDER.

Transducer which for a given amplitude range of input voltages produces a larger range of output voltages. One important type of expander employs the envelope of speech signals to expand their volume range.

EXPANDING ANCHOR.

Earth-fastening device with expanding blades.

EXPANDING UNIVERSE.

Refers to the fact that the mean distance between the bodies of the universe is apparently increasing; the rate of recession of the more remote visible galaxies as indicated by the red shift, being several thousand miles per second.

EXPANDOR.

Electrical device which restores to normal (expands) the volume range of a signal which was previously compressed.

EXPANSION.

1. Process in which the effective gain applied to a signal is varied as a function of the signal magnitude, the effective gain being greater for large, than for small signals.
2. Widening, in a radio amplifier, of the volume range of a signal so that the weak passages become weaker and loud passages become louder.
3. Increase, in facsimile transmission, of contrast between the dark and light portions of the picture transmitted.

EXPANSION CHAMBER.

Inclosure containing air supersaturated with water vapor by sudden expansion, in which rapidly moving particles are revealed by streaks of droplets called cloud tracks.

EXPENDABLE PROPERTY.

Property that may be consumed in use or loses its identity in use and may be dropped from stock record accounts when it is issued or used.

EXPERIMENTAL MODEL.

Model of the complete equipment to demonstrate the technical soundness of the basic idea. This model need not have the required final form factor or necessarily contain parts of final design.

EXPERIMENTAL PERIOD.

Time between 12 midnight and local sunrise. This period may be used for experimental purposes in testing and maintaining apparatus by the licensee of any standard broadcast station on its assigned frequency and with its authorized power provided no interference is caused to other stations maintaining a regular operating schedule within such period.

EXPERIMENTAL STATION.

Station utilizing electromagnetic waves between 10 kilocycles and 3,000,000 megacycles in experiments with a view to the development of science or technique. This definition does not include amateur stations.

EXPERIMENTAL TELEVISION BROADCAST STATION.

Station licensed for experimental transmission of transient visual images of moving or fixed

objects for simultaneous reception and reproduction by the general public.

EXPLORER.

1. First United States satellite to be successfully placed in an earth-circling orbit. On January 31, 1958, at 10:48 p.m. EST, a United States Army Jupiter-C launching vehicle left Cape Canaveral, Fla., in a trajectory that placed a satellite, developed by the Jet Propulsion Laboratory of the California Institute of Technology, in an elliptic orbit. The Explorer satellite is the eighty-inch, solid-propellant, last stage of the vehicle. The six-inch-diameter body weighed 30.8 pounds, after burnout, including approximately eleven pounds of instruments in its nose section.

EXPLORING COIL.

Small coil used to measure flux in a magnetic field. It is connected to a ballistic galvanometer or other instrument, and gives an indication when the magnetic field or the position of the coil in the field is suddenly reversed. (Reference: FLIP COIL, SEARCH COIL.)

EXPLOSIVE ATMOSPHERE.

Refers to a condition where the air is mixed with dust, metal particles, or inflammable gas in such proportion that it may ignite or explode.

EXPONENTIAL.

Pertaining to exponents or to an expression having exponents. A quantity varying in an exponential manner is increasing according to the square, or some other power, of a factor instead of linearly.

EXPONENTIAL CURVE.

Curve representing the variation of an exponential function.

EXPONENTIAL HORN.

Horn whose cross-sectional area varies exponentially with its length.

EXPONENTIAL QUANTITY.

Monotonic quantity in which the rate of increase (or decrease) of the quantity is proportional to the quantity itself. The discharge current of a capacitor through a noninductive resistor is an exponential quantity.

EXPONENTIAL SWEEP.

Electron beam sweep whose speed of travel varies exponentially with time. The sweep starts fast and decreases in speed as it approaches the end of its travel.

EXPOSURE METER.

Instrument used to measure the intensity of light for the purpose of determining the proper camera exposure. Highly accurate exposure meters use photo-electric cells.

EXPOSURE SCALE.

Useful exposure scale is the ratio of the maximum exposure to the minimum exposure between which the emulsion yields satisfactory reproduction.

EXTENSION.

1. Additional telephone set on the same line but at a different location other than the main station.

2. PBX station.

OUTSIDE. Extension on premises separated from the main station.

OUTSIDE PBX. PBX station on premises separated from the PBX.

POLE TOP. Cross arm or similar fixture mounted vertically at the top of a pole to permit cross-over clearance or extend the height of the pole for various other reasons.

EXTENSION ARM.

Cross arm added vertically to the top of a pole for greater height.

EXTENSION CABLE ARM.

Short arm securing one cable designed to bring another cable in line or to throw it out of line to clear an obstruction.

EXTENSION CORD.

Pair of wires having a plug at one end and an outlet at the other, used to bring electric power to a point at some distance from the usual outlet.

EXTENSION STATION.

Telephone station associated with a main station through connection to the same subscriber line and having the same call number designation as the associated main station.

EXTERNAL RESISTANCE.

Resistance that is connected externally between the terminals of a battery or other generator. The resistance that is inside the battery or generator is the internal resistance.

EXTINCTION POTENTIAL.

Lowest value to which the plate voltage of a gaseous tube can be reduced from a higher value under given conditions without stopping the flow of plate current.

EXTRACT.

Form a new word by placing side by side, selected segments of given words.

EXTRACTION.

Process of delegating to a higher supply echelon, the responsibility for further action of any item, requisitioned or on shipping order, which is not available from within the local resources of the extracting activity or from other prospective supply activities within its supply jurisdiction.

EXTRAGALACTIC NEBULAE.

Vast star systems outside our own galaxy.

EXTRAORDINARY RAY.

1. Rays in which an incident ray is split in the ionosphere. This ray is called an extraordinary ray because it does not follow the simple laws of refraction.

2. When light is sent through a double refracting crystal, it is separated into two components which are at right angles to each other and are known as the extraordinary ray and the ordinary ray.

EXTRAORDINARY WAVE.

1. Waves into which a sky wave is split in the ionosphere. It is called an extraordinary wave be-

cause it does not follow the simple laws of refraction.

2. Magneto-ionic wave component which, when viewed below the ionosphere in the direction of propagation, has clockwise or counterclockwise elliptical polarization, respectively, accordingly, as the earth's magnetic field has a positive or negative component in the same direction. This wave is designated by the letter X, and is sometimes called the X-wave. The other component is the ordinary wave or O-wave.

EXTRAPOLATE.

1. Estimate the value of a function for values of the variable lying outside the range in which values of the function are known; as by extending the graph of the function beyond the actually plotted points.

2. Computer action occurring automatically or after a manually inserted instruction on hostile, unknown, faker, or special tracks. Extrapolation projects the track indefinitely by means of logical conclusions based on the assumption of continuity of previously known data.

EXTRAPOLATED.

Air defense term used to describe a track status associated with hostile, unknown, faker, or special track which the air surveillance branch cannot track but which are required by the weapons branch.

EXTREMELY HIGH FREQUENCY.

1. Frequency: 30,000 to 300,000 megacycles. (Millimetric waves).

2. Wavelength: 0.1 to 1 centimeter.

EYELENS.

Lens of an eyepiece that is nearest to the eye. Various types of lenses are used for this purpose. (Reference: EYEPIECE.)

EYEPIECE.

Lens group nearest the eye, in a telescope or microscope, with which the image formed by preceding lenses is viewed.

F

F

F (FAHRENHEIT).

Temperature scale in which the freezing point of water is 32° and the boiling point of water is 212° above zero.

F LAYER.

Ionized layer in the F region, existing in the night hemisphere and is the weakly-illuminated portion of the day hemisphere.

F₁ LAYER.

One of the regular ionospheric layers at an average height of about 225 kilometers which occurs during the daylight hours and follows the sun closely. The lower of the two ionized layers normally exists in the F-region in the day hemisphere.

F₂ LAYER.

Most useful of the ionospheric layers for radio wave propagation. It is the most highly ionized and highest of the layers, having an average night height of 225 kilometers and a mid-day height of about 300 kilometers. This layer is ionized throughout the day. Its ionization is least just before dawn and maximum early in the afternoon.

F NUMBER.

Lens rating expressing brightness of image in relation to the aperture (useful area) of a lens, obtained by dividing the focal length of lens by effective diameter of the lens. The lower the F number, the shorter the exposure required, or the lower the illumination needed for satisfactory results.

F REGION.

Region of the ionosphere between about 200 and 400 kilometers above the earth's surface.

F/M (FOREIGN MISSION).**F+.**

Positive terminal of an A- battery or positive polarity of other sources of filament voltage; also denotes the terminal to which the positive side of the filament voltage source should be connected. (Reference: A+).

F-.

Negative terminal of an A- battery or negative

polarity of other sources of filament voltage. On electronic equipment, other than sources of filament voltage, A- denotes the terminal to which the negative side of the filament voltage source should be connected. (Reference: A-)

F-SCAN.

Single signal only, appearing as a bright spot. Azimuth error angle (relative bearing) appears as the horizontal coordinate, elevation angle as the vertical coordinate.

FA.

ITU designation for aeronautical station.

FAA.

ITU designation for aeronautical advisory station.

FAB.

ITU designation for aeronautical broadcast station.

fac (FACILITY, FACILITIES).

(Reference: FACILITY, FACILITIES.)

FAC (FORWARD AIR CONTROLLER).

Officer in charge of tactical air control party. Being a combat experienced fighter pilot familiar with the problems of air strikes against ground targets, he actually directs aircraft on front line targets.

FACE.

1. Plane surface on a crystal which stands in a particular and invariable relation to the axes and planes of reference and to other faces.
2. Front or viewing surface of a cathode-ray tube.

FACE EQUIPMENT.

Equipment located in the vertical panels of the test desk and attendant's switchboard.

FACED CRYSTAL.

Single or twinned mass of quartz bounded in part or entirely by the original crystal growth-faces.

FACILITY.

1. Physical plant, such as real estate and improvements thereto, including buildings and equipment, which provides the means for assisting or making easier the performance of a function.

2. Any part of adjunct of a physical plant, or any item of equipment which is an operating entity and which contributes or can contribute to the execution of a function by providing some specific type of physical assistance, such as railroad, railroad rolling stock vehicles, access road, railroad spur, ship, pier.

3. Any facility used as an aid of air navigation, including landing areas and lights.

4. Any apparatus or equipment for disseminating weather information, for signalling, for radio direction findings, or for radio or other electrical communication.

ALTERNATE. C-E facility which is established for the purpose of replacing or supplementing another C-E facility of facilities, under real or simulated emergency conditions. The alternate facility is usually some other method of C-E. Frequently, radio alternate facilities are established to replace or supplement wire facilities. (Reference: BACKUP FACILITY.)

STANDARD. Basic communications-electronics functional entity which will satisfy a specific portion of a communications-electronics operational requirement. Standard facilities are described in the USAF Communications-Electronics Program (PC) and designated by a code. An associated Standard Facility Equipment List indicates the material required to install the standard facility.

STANDBY. C-E facility in caretaker status. It is usually a C-E facility left standing after an operational need ceases to exist, but because of possible future use has not been dismantled.

FACILITIES.

Elements of telephone plant entering into a complete connection. In some groups, facilities means the entire connection; in others, central office plant only; in still others, only outside plant. The customer's equipment is not included; it is considered as being served by facilities.

FACING.

Term applied to the side of a pole which supports the cross-arms.

FACING POLES.

Placing pole gains in such a direction that the crossarm will pull against the pole.

FACOM.

Long distance measuring or radio navigation system using the phase comparison technique. It is a baseline system operating in the low frequency band and will work under adverse propagation and noise conditions over ranges up to 3000 miles from the signal source. Extremely stable crystal oscillators are required for generation of a local frequency and a correspondingly stable transmitted signal. Distance information is derived by phase comparison of received and locally generated signals. If the received and locally generated signals are in phase at a given point and the receiver is then moved, the two signals will be out of phase by an amount directly proportional to the distance. Thus, the phase shift can be used to determine the distance traveled. Accuracy of this system is in the order of one percent of the distance from the transmitter. It can be used with existing systems, as only two stations are required for a position fix using the base line method. However, it can also be used with an omnidirectional system such as NAVAGLOBE to obtain a rhotheta system, or one which gives azimuth and distance from a single station.

FACSIMILE.

System of radio or wire communications for the transmission of fixed images. Type A facsimile is a system of facsimile communication in which images are built up of lines or dots of constant intensity. Type B facsimile (telephotography, photoradio, etc.,) is a system of facsimile communication in which images are built up of lines or dots of varying intensity.

FACSIMILE BROADCAST STATION.

Station licensed to transmit images of still objects for reception by the general public.

FACSIMILE RECEIVER.

Apparatus employed to translate the facsimile signal into a graphic record.

FACSIMILE RECEPTION.

Reception of radio signals corresponding to the subject copy being transmitted in a facsimile system.

FACSIMILE RECORDER.

Part of the facsimile receiver in which the picture signal, in its final form, is systematically registered upon a record sheet.

FACSIMILE SIGNAL.

Voltage or current produced by scanning the subject copy in a facsimile system.

FACSIMILE STANDARDS.

Facsimile equipment cannot be interconnected and produce satisfactory copy unless they have the same standards. The following standards have been proposed as CCIR facsimile standards:

- A. Wire or radio photo equipment.
 1. Maximum copy size 8.07 X 11.65 inches.
 2. Drum speed 90 and 60 RPM.
 3. Line advance 96 and 127 lines per inch.
4. Index of cooperation 264. and 350.
 5. Maximum skew 0.15 inches per copy.
 6. Audio frequency shift limits 1500 cycles maximum signal (white), 2300 cycles minimum signal (black).
 7. Standard frequency; a multiple or sub-multiple of 300 cycles.
 8. Stability of standard:
 - (a) Short time (30 Min.) ± 1 per 200,000,000
 - (b) Long time (6 Mos.) ± 1 per 200,000,000
 - (c) Adjustable ± 1 per 50,000
- B. Facsimile equipment for the transmission and reception of weather maps and other large size material.
 1. Maximum copy size 12 X 18 inches.
 2. Drum speed 30,60 and 120 RPM.
 3. Line advance 96 lines per inch.
 4. Index of cooperation 576.

5. Carrier frequency 1800 and 2400 cycles amplitude modulated.

6. Audio frequency shift limits 1500 cycles maximum signal, 2300 cycles minimum signal.

7. Frequency shift (FS) 800 cycles total shift.

FACSIMILE TRANSIENT.

Distinct line of series of lines perpendicular to the direction of scanning produced in the recorded copy immediately following a sudden change in density.

FACSIMILE TRANSMISSION.

1. Transmission of signals produced by the scanning of fixed graphic material, including pictures, for reproduction in record form.
2. Electric transmission, either over wires or by radio, of a still image of a previously reproduced graphic record.

FACSIMILE TRANSMITTER.

Apparatus employed to convert the subject copy into suitable facsimile signals.

FACSIMILE-SIGNAL LEVEL.

Expression of the maximum signal power or voltage created by the scanning of the subject copy as measured at any point in a facsimile system. According to whether the system employs positive or negative modulation, this will correspond to picture white or black, respectively. It may be expressed in decibels with respect to some standard value such as one milliwatt or one volt.

FACTOR.

1. Elements, quantities, or symbols which, when multiplied together, form a product.
2. Number by which a given time is multiplied to obtain the complete time required for developing or printing photographs.

MODULATION. In an amplitude modulated wave, the ratio of half the difference between the maximum and minimum amplitudes to the average amplitude. This ratio is multiplied by 100 to obtain percentage modulation.

MU. Ratio of the change in one electrode voltage to the change in another electrode voltage, under the conditions that a specified current remains unchanged and that all other electrode voltages are maintained constant. It is a comparison of the relative effects of two electrodes on the current in the circuit of a particular electrode. (Reference: AMPLIFICATION FACTOR.)

POWER. Ratio of the actual power of an alternating or pulsating current, as measured by a wattmeter, to the apparent power, as indicated by ammeter and voltmeter readings. The cosine of the phase angle between a sinusoidal voltage and the resulting current (sinusoidal). The ratio of resistance to impedance, and, therefore, a measure of the loss in an inductor, capacitor, or insulator.

REFLECTION. 1. Ratio of the load current that is delivered to a particular load when the impedances are mismatched to that delivered under conditions of matched impedances.

2. Ratio of the total luminous flux reflected by a given surface to the incident flux.

REPLACEMENT. Estimated percentage of equipment in use that will require replacement during a given period due to wearing out beyond repair, enemy action, abandonment, pilferage, and other causes except losses incident to the sorption data for seasonal variations. Those attributable to ship sinkings.

SEASONAL. Factors used to adjust sky-wave absorption data for seasonal variations. These variations are due primarily to seasonal fluctuations in the heights of the ionospheric layers.

FACULAE.

Bright spots near edge of sun.

FADE.

To change gradually in signal amplitude.

FADE CHART.

Graph on which the null areas of an air-search radar antenna are plotted as an aid to estimating target altitude.

FADE IN.

1. To increase strength gradually of a previously weak or inaudible signal. The opposite of fade out.

2. To increase signal strength gradually in a sound or television channel being connected to a system.

FADE OUT.

1. Intentional and gradual disappearance of a television or sound scene, produced at one location or its control circuit prior to or during change-over to another location.

2. Failure of radio waves to arrive at a location either because of magnetic storms, atmospheric disturbances, or other conditions along the transmission path.

FADER.

Multiple-unit control used in radio for gradual change-over from one microphone or audio channel to another. In television, change-over from one camera to another, and in motion-picture projection, change-over from one projector to another.

FADING.

1. Fluctuation in intensity of any or all components of a received signal due to changes in the characteristics of the propagation path or transmission medium.

2. Variation of radio field strength caused by changes in the transmission medium with time.

FLAT. That type of fading in which all components of the received radio signal fluctuate in the same proportion simultaneously.

INTERFERENCE. Produced by different wave components traveling slightly different paths to the receiver.

MARGIN. 1. Number of decibels of attenuation which may be added to a specified radio frequency propagation path before the signal-to-noise ratio of a specified channel falls below a specified minimum.

2. Allowance made in radio system planning to accommodate estimated fading.

SELECTIVE. Affects the different frequencies within a specified band unequally.

FAETU (FLEET AIRBORNE ELECTRONICS TRAINING UNIT).

FAHNESTOCK CLIP.

Spring-type terminal to which a temporary connection can readily be made.

FAHRENHEIT.

Temperature scale in which the freezing point of water is 32° and the boiling point of water is 212° above zero.

FAIL-SAFE CONTROL.

System of remote control to prevent improper operation of the controlled function in the event of circuit failure.

FAILURE, PARTIAL.

Trouble condition resulting in some but not all use of service.

FAILURE, TOTAL.

Complete loss of service.

FAIR. (FLEET AIR).

FAIR.

Air defense term used to describe a tracking-merit evaluation associated by the computer with a particular track with which the automatic-tracking function is experiencing difficulty.

FAKER.

Classification of a known friendly aircraft simulating an enemy during air-defense training missions.

FALCON.

Airborne range-only, fire-control radar, AN/APG-13. It is a 12-cm radar for feeding range of isolated waterborne targets to the sights of fixed, forward-firing, 75-mm cannon mounted in medium bombers. The range information is fed manually into the sight. The guns are fixed with respect to the aircraft, and the altitude of the ship is adjusted for proper firing.

FALL IN.

Synchronous motor delivers no power except

when running exactly at synchronous speed. Synchronous motors are usually started by auxiliary motors. The instant the synchronous motor reaches synchronous speed it is said to fall-in to synchronism.

FALL OUT.

Deposit of radioactive material created by an atomic explosion which has settled out of the air or from contaminated water.

FAN. (FAN OUT).

To spread a group of conductors apart so that each can be worked on or terminated.

FAN ANTENNA.

Pick-up wires are vertical and spread out fanwise from a common lower junction.

FAN MARKER.

Having a fan-shaped radiation pattern and located along an airway radio leg to provide a position fix.

FAN MARKER BEACON.

Radio beacon which radiates in a vertical fan shaped pattern. The signal can be keyed for identification purposes.

FANNED BEAM ANTENNA.

Unidirectional antenna so designed that transverse cross-sections of the major lobe are approximately elliptical.

FANNING BEAM.

Narrow antenna beam which is repeatedly scanned over a limited arc.

FANNING STRIP.

Insulated board, often of wood, which serves to spread out the wires in a cable for distribution to a terminal board.

FAP (FREQUENCY ALLOCATION PANEL).

FAR-END CROSS TALK.

Cross talk which travels along the disturbed circuit in the direction in which the signals travel in that circuit. To determine the far-end cross talk between two pairs, one and two, signals are transmitted on pair one at station A, and the cross-talk level is measured on pair two at station B. (Reference: NEAR-END CROSS TALK.)

FARAD.

Basic unit of capacitance. A capacitor has a capacitance of one farad when a voltage change of one volt per second across it produces a current of one ampere. The farad is too large a unit for practical work; hence smaller units are generally used. The micofarad is equal to one millionth farad, while the micro-microfarad is equal to one millionth microfarad.

FARADAY.

The number of coulombs (96,500) required for an electrochemical reaction involving one electrochemical equivalent.

FARADAY EFFECT.

When a plane polarized beam of light passes through certain transparent substances in a direction parallel to the lines of a strong magnetic field, the plane of polarization is rotated a certain amount.

FARADAY SCREEN.

(Reference: FARADAY SHIELD.)

FARADAY SHIELD.

Network of parallel wires connected to a common conductor at one end to provide electrostatic shielding without affecting electromagnetic waves. The common conductor is usually grounded.

FARADAY'S LAWS.

1. In electrolysis, the quantity of a substance deposited in a given time is proportional to the current.
2. In electrolysis, the quantities of different substances deposited by the same current in the same time are proportional to their electrochemical equivalents.
3. In electromagnetic induction, the electromotive force induced in a circuit is proportional to the rate at which the flux linkage of the circuit are changing.

FARADAY'S WIRE CYLINDER.

Cylinder of wire gauze, closed at one end, used to shield a device from an external electric field. (Reference: FARADAY SHIELD.)

FARADIC CURRENT.

Intermittent and nonsymmetrical alternating current obtained from the secondary winding of an induction coil.

FARADMETER.

Instrument for measuring electric capacitance.

FARNSWORTH IMAGE DISSECTOR TUBE.

Special cathode-ray tube for use in television cameras.

FARSIGHTEDNESS (HYPERMETROPIA).

Eye defect in which the image tends to be focused beyond the retina with the result that the image is blurred and indistinct.

FAST SPIRAL.

Bland-spiral groove having a pitch that is much greater than that of the recorded grooves.

FAST TIME CONSTANT.

Type of coupling circuit used in radar receivers to permit discrimination against echo pulses of duration longer than the transmitted pulse.

FASTENER.

Device used to secure a conductor (or other object) to the structure which supports it.

FAT.

ITU designation for flight test station.

FATHOMETER.

Direct-reading device for determining the depth of water in fathoms or other units by sonic (sound) or supersonic (above audibility) waves reflected from the ocean bottom.

FATIGUE.

1. Technical term applied to a gradual weakening in materials in use.
2. Gradual decrease of some characteristic property due to external causes.

FAULT.

Defect in a wire circuit as a result of unintentional grounding, a break in the line, or a crossing or shorting of wires.

FAULT FINDER.

Test set for locating trouble conditions in a telephone system.

FAX.

ITU designation for aeronautical fixed station.

FB.

ITU designation for base station.

FC (FIELD CABLE, FILTER CENTER).

ITU designation for coast station. (Reference: FILTER CENTER.)

FCB.

ITU designation for marine broadcast station.

FCC (FEDERAL COMMUNICATIONS COMMISSION).

Board of seven commissioners, appointed by the President under the Communications Act of 1934, having the power to regulate all electrical communications systems in the United States and possessions of the United States. There are five primary bureaus; Engineering, Law, Accounting, Administration, and Secretary. Radio, television, facsimile, telegraph, telephone and cable systems are also governed by the FCC.

FCDA (FEDERAL CIVIL DEFENSE ADMINISTRATION).

FCS (FEDERAL CATALOGUE SYSTEM).

FDATC (FLYING DIVISION AIR TRAINING COMMAND).

FE (FIGHTER ESCORT).

FEAF (FAR EAST AIR FORCES).

FEAMC (FAR EAST AIR MATERIEL COMMAND).

FEAMCOM. (FAR EAST AIR MATERIEL COMMAND (AIR FORCE)).

FEASIBILITY TEST.

Determines whether or not a plan is within the capacity of the resources which can be made available.

FEATURE SELECTION SWITCHES.

Two parallel banks of five toggle switches on the upper left corner of a situation-display console; these switches govern display and brilliance of characters in situation-display tabular messages.

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FEED.

To supply a signal to the input of a circuit.

FEEDBACK.

1. Method of regeneration or degeneration involving a coupling where a signal is fed from a high level point in an amplifier to a lower level point in the same or a previous stage in such a manner as either to increase or to decrease the apparent gain of the amplifier. (Reference: POSITIVE FEEDBACK, NEGATIVE FEEDBACK.)

2. In a transmission system, the returning of a fraction of the output to the input.

INDUCTIVE. Transfer of energy from the output circuit to the input circuit of an amplifying device through an inductor, or by means of inductive couplings.

NEGATIVE. Process by which a part of the power in the output circuit of an amplifying device reacts upon the input circuit in such a manner as to reduce the initial power, thereby decreasing the amplification.

OSCILLATOR. Amplifier in which the output is coupled back to the input.

POSITIVE. Process by which a part of the power in the circuit of an amplifying device reacts upon the input circuit in such a manner as to reinforce the initial power, thereby increasing the amplification. (Reference: REGENERATION.)

FEEDBACK WINDING.

Of a saturable reactor, a control winding to which a feedback connection is made.

FEEDER.

Conductor or group of conductors connecting (a) two generating stations (b) two substations (c) a generating station and a substation or feeding point (d) a substation and a feeding point (e) a transmitter and an antenna.

FEEDER CABLE.

Cable extending from the central office along a primary route (main feeder cable) or from a main feeder cable along a secondary route (branch feeder cable) and providing connections to one or more distribution cables.

FEEDER CONTROLLER.

In radar air traffic control systems, the surveillance radar controller is responsible for funneling aircraft into a runway radar control pattern.

FEEDER DISTRIBUTION CENTER.

Distribution center at which feeders or subfeeders are connected.

FEEDING POINT.

Point of junction of a distribution feeder with a distribution main or service connection.

FEINT.

Reflectors used to simulate a large striking force for drawing enemy action away from another operation.

FEMALE.

Recessed portion of a device into which another part fits.

FER (FERRY, FERRYING).**FERRET.**

1. Aircraft, ship or vehicle especially equipped for the detection, location, recording and analyzing of electromagnetic radiation.
2. Aircraft fitted with electronic warfare equipment used in electronic reconnaissance.

FERROMAGNETIC MATERIAL.

Having a permeability that is considerably greater than the permeability of a vacuum and that varies with the magnetizing force.

FERROMETER.

Instrument for making permeability and hysteresis tests of iron and steel.

FERROUS.

Pertaining to iron, and particularly to iron compounds in which the iron is bivalent.

FGD (FINE GRAIN DATA).

In air defense, raw radar returns which has been quantized by AN/FST-2 equipment at a long-range-radar site.

FIBER.

Hard, tough insulating material generally consisting of paper and cellulose compressed into rods, sheets, or tubes.

FIBER NEEDLE.

Playback point or phonograph needle made from fiber. Being soft, it gives lower scratch noise.

FIC (FLIGHT INFORMATION CENTER).

Unit established to provide flight information and alerting service.

FIDELITY.

1. Degree to which a transmission system, or a portion thereof, reproduces at its output, the characteristics of a signal which is impressed upon its input.
2. Synonym for lack of wave form distortion. Used to denote the accuracy with which a wave form is duplicated after having passed through a transmission system or portion thereof. Fidelity, however, as the word is commonly used, is not affected by wave form impairment due to the introduction of interference.

FIDO (FOG, INTENSE DISPERSAL OF).

Fog dispersal equipment.

FIDUCIAL AXES.

Lines joining opposite fiducial marks on a photograph.

FIDUCIAL MARKS.

Index marks rigidly connected with the camera lens through the camera body and forming images on the negatives which define the principal point of the photograph.

FIELD.

1. Area or solid angle picked up by the lens system of the television camera. Also the area covered during one vertical sweep of the scene by the scanning element. In normal scanning where one line touches the next, the field is the entire scene being televised. In double interlaced scanning, the field is one third the area of the scene.
2. General term applying to a region under the influence of some physical agency, such as electricity, magnetism, or a combination, produced by an electrically charged object, by electrons in motion, or by a magnet.

FIELD COIL.

Suitable insulated winding to be mounted on a field pole to magnetize it and produce a constant-strength magnetic field.

FIELD DISTORTION.

Existing between the north and south poles of a generator due to the counter electromotive force in the armature winding.

FIELD EQUATION.

Specifies the properties of a field of force, such as the Maxwell equations for electromagnetic fields.

FIELD EQUIPMENT.

Tactical signal communication equipment designed for frequent movement or handling.

FIELD GLASS.

Type of binocular.

FIELD INTENSITY.

Electric or magnetic field intensity at a given location associated with the passage of radio waves. It is commonly expressed in terms of the electric field intensity, in microvolts, millivolts, or volts per meter. In the case of a sinusoidal wave, the root-mean-square value is commonly stated. Unless otherwise stated it is taken in the direction of maximum field intensity.

FIELD JACK.

Area in a panel in which jacks are installed.

FIELD LENS.

One of the lenses of an eyepiece. It is the lens which is nearest the image upon which the eyepiece is focused.

FIELD MAINTENANCE.

In Army and Air Force usage, that maintenance authorized and performed by designated maintenance activities in direct support of using organizations. It is normally limited to replacement of unserviceable parts, subassemblies, or assemblies.

FIELD POLE.

Structure of magnetic material on which a field coil of an electromagnetic device may be mounted.

FIELD RHEOSTAT.

Variable resistance connected to the field coils of a motor or generator and used to vary the field current.

FIELD SIDE (POLE LINE).

Side of a line away from the highway.

FIELD STOP.

Physical element (such as a stop, diaphragm, or lens periphery) of an optical system which limits the field of view covered by the system.

FIELD STRENGTH.

Electric or magnetic field intensity at a given location associated with the passage of radio waves. It is commonly expressed in terms of the electric field intensity, in microvolts, millivolts, or volts per meter. In the case of a sinusoidal wave, the root-mean-square value is commonly stated. Unless otherwise stated it is taken in the direction of maximum field intensity.

FIELD STRENGTH DIAGRAM.

Graphic representation of the field strength at a constant distance from an antenna.

FIELD SUPPORT EQUIPMENT.

Required in addition to unit essential equipment and base support equipment to perform the assigned mission under combat conditions. Normally, all requirements for field support equipment will be confined to organizations outside the ConUS.

FIELD TELEPHONE.

Durable, light, and portable, designed for field use.

FIELD TELEPHONE SWITCHBOARD.

Portable type switchboard designed for field use.

FIELD WIRE.

Flexible insulated wire used in field telephone and field telegraph systems.

FIGHTER CONTROLLER.

Officer on the staff of a tactical air controller charged with coordination and evaluation of air warning reports and operational control of aircraft allocated to him.

FIGHTER DIRECTION SHIP OR AIRCRAFT.

Ship or aircraft properly equipped and manned for effectively directing fighter aircraft operations.

FIGHTER DIRECTOR.

Officer on the staff of a tactical air director responsible for direction of such air warning facilities and aircraft as may be allocated to him for the defense of his area. (Reference: AIR CONTROLLER.)

FIGHTER OFFICER INTERCEPTOR.

Member of the battle staff responsible for all matters pertaining to manned interceptors.

FIGHTER OFFICER MISSILE.

Member of the battle staff responsible for all matters pertaining to Air Force missiles.

FIGS. (FIGURES).**FILAMENT.**

1. Element within a vacuum tube which provides a source of electrons when heated. In some tubes, the filament may be used to heat a cathode which then becomes the source of electrons.
2. Incandescent element in an electric light bulb.

FILAMENT BATTERY.

Source of energy which heats the filament of a vacuum tube. (Reference: A- BATTERY.)

FILAMENT CIRCUIT.

Complete circuit through which filament current flows.

FILAMENT CURRENT.

Current supplied to a filament.

FILAMENT EMISSION.

Liberation of electrons from a heated filament in a vacuum tube.

FILAMENT POWER SUPPLY.

Power source for the filament circuits.

FILAMENT RESISTANCE.

Resistance in ohms of the filament of a vacuum tube or incandescent lamp.

FILAMENT RHEOSTAT.

Variable resistance used in series with the filament of a vacuum tube to regulate the amount of filament current.

FILAMENT SATURATION.

Condition in which the plate current of a vacuum tube cannot be further increased by increasing the filament voltage and hence cathode temperature at a given value of plate voltage.

FILAMENT TRANSFORMER.

Used exclusively to supply filament current for one or more vacuum tubes.

FILAMENT VOLTAGE.

Voltage between the terminals of a filament.

FILAMENT WINDING.

Secondary winding provided on a power transformer to furnish alternating filament voltage for one or more vacuum tubes.

FILING TIME.

Date and time a message is received from an originator by a communications agency for transmission. Filing time for a refile message is the date and time a message is received by the Communication/Signal Center for transfer to another system.

FILL.

1. Number of lines working a particular cable or a cable count.

2. Percentage or working lines to total pairs provided.

FILLER.

Bulk material of a record compound as distinguished from the binder.

FILLER METAL.

Material to be added in making a weld.

FILM BADGE.

Small piece of X-ray or similar photographic film carried by an individual in a badge holder and used to determine the amount of radiation an individual receives.

FILM BASE.

Thin, flexible, transparent sheet of cellulose nitrate, acetate, or similar material which is coated with a light-sensitive emulsion and used for taking photographs.

FILM SCANNING.

Process of converting movie film into corresponding electrical signals that can be transmitted by a television system.

FILTER.

1. Network of resistors, inductors, and capacitors, or any one or two of these, which offers comparatively little opposition to certain frequencies or to direct current, while blocking the passage of other frequencies. An example is the filter used in a power supply, which allows the direct current to pass, but filters out the ripple.

2. Combination of a high impedance with a short circuiting capacitor for suppressing ripples in the battery charging circuit.

3. Tuned circuit designed to pass ac circuits of a specified frequency.

ACOUSTIC. Sound-absorbing device that selectively suppresses certain audio frequencies.

BAND ELIMINATION. Filter network which rejects a given band of frequencies while passing frequencies to either side of this band.

BAND SUPPRESSION. Filter designed to suppress a given band of frequencies.

BANDPASS. Circuit designed to pass, with nearly equal response, all currents having frequencies within a definite band, and to reduce substantially the amplitudes of currents of all frequencies outside that band.

BANDSTOP. Filter having characteristics inverse to those of bandpass, barring frequencies within a defined band and offering low attenuation to those outside.

CAPACITOR-INPUT. Filter which has a capacitor connected directly across (in parallel with) its input.

CHOKE-INPUT. Filter which has a choke in series with the input, as distinguished from a capacitor-input filter.

CLICK. Device to reduce or eliminate the key clicks in a radiotelegraph transmitter. (Reference: KEY-CLICK FILTER.)

HIGH PASS. Filter so designed that it tends to pass all frequencies below that frequency.

KEY-CLICK. Device to reduce or eliminate the key clicks in a radiotelegraph transmitter.

LOW PASS. Filter so designed that it tends to pass all frequencies below a certain value and attenuates all frequencies above a certain value.

MODE. Device for separating waves of different transmission modes.

SENDING. Filter employed at the transmitting terminal.

SEPARATION. Combination of filters used to separate one band of frequencies from another. Often used to separate carrier and voice frequencies for transmission over individual paths.

TUNED. Resonant circuit connected between two circuits to prevent the passage of signals to its own resonant frequency.

WAVE. Transducer for separating waves on the basis of their frequency. It introduces relatively small insertion loss to waves in one

or more frequency bands and relatively large insertion loss to waves of other frequencies.

FILTER ATTENUATION BAND.

Frequency band in which the attenuation constant is not zero.

FILTER CAPACITOR.

Capacitor that is used in a filter circuit.

FILTER CARTRIDGE.

Element in a filter through which lubricating oil or fuel oil passes and which retains the impurities of the oil.

FILTER CENTER.

Location in an aircraft control and warning system at which information from observation posts is filtered for further dissemination to air direction centers.

FILTER CHOKE.

Iron-core coil which allows direct current to pass while opposing the passage of pulsating or alternating currents. Used in filter circuits.

FILTER CRYSTAL OR PLATE.

Quartz plate or crystal which is used in an electrical circuit designed to pass energy of certain frequencies only.

FILTER QUARTZ.

Raw quartz unsuited for the manufacture of oscillator plates but which can be utilized for filter plates.

FILTER SLOT.

Choke in the form of a slot designed to suppress unwanted modes in a waveguide.

FILTER STOP BAND.

Filter which passes only frequencies within a given band.

FILTER RADAR DATA.

Radar data from which undesired returns have been removed by mapping.

FILTERS.

Bandpass devices used to separate luminance and chrominance signals at video frequencies. Color TV terminology.

FINAL APPROACH.

That part of an instrument approach procedure made either in line with the axis of the runway in use when approaching the land, or from the interception of the last track designated for approach to a point in the vicinity of the aerodrome from which a landing may be made.

FINAL CONTROLLER.

Precision radar controller responsible for information and control procedures required to complete the actual landing. During PPI assists, this responsibility becomes the function of the PPI operator engaged in the operation.

FINDER.

1. Name given to switch or relay group in switching systems that selects the path which the call is to take through the system. Operates under the control of the calling station's dial.
2. Camera accessory that shows the actual field of view being covered by the camera.

FINDER, RANGE.

Movable calibrated unit of the receiving mechanism of a teletypewriter by means of which the selecting interval may be moved with respect to the start signal.

FINDER START LEAD.

Wire, or lead, over which the first electrical pulse is transmitted from the group relay circuit to a preselected linefinder, thus causing the linefinder to operate and hunt for a calling line.

FINDER SWITCH.

Automatic switch for finding a calling telephone subscriber line or trunk and connecting it to the switching apparatus.

FINE.

Inertial techniques and instrumentation for fighters.

FINE GRAIN DATA.

Raw radar returns which have been quantized by AN/FST-2 equipment at a long-range-radar site.

FINGER STOP.

Fixed device attached to the face of a telephone dial to limit and travel of the finger wheel from any selected point.

FINISHED BLANK.

Crystal product after the completion of all processes. This may include electrodes adherent to the crystal blank. (Reference: PIEZOID.)

FINISHING.

Process of repeated hand lapping and electrical testing by which a finished crystal blank is brought exactly to specification.

FINISHING RATE.

Rate of charge, expressed in amperes, to which the charging current for batteries is reduced near the end of charge to prevent excessive gassing and temperature rise.

FINISHING SAW.

Accurately adjusted saw with a blade of relatively small diameter used in sawing crystal blanks from bars or in wafering.

FINITE.

Having fixed and definite limits.

FINS.

Radial sheets or discs of metal attached to metal parts of a power tube or other component for dissipating heat.

FIR (FLIGHT INFORMATION REGION).

Airspace of defined dimensions within which flight information services and alerting services are provided.

FIRE.

1. To ionize in a gas tube.
2. To trigger.

FIRE ALARM BOX.

Box or cabinet containing the equipment necessary to transmit, over an electric circuit to some central point, a signal alarm of fire.

FIRE ALARM SYSTEM.

Alarm system signaling the presence of fire.

FIRE ALARM THERMOSTAT.

Electrical switch designed to operate in response to the application of heat.

FIRE CONTROL.

The determination and regulation of the direction of gunfire.

FIRE CONTROL RADAR.

System providing highly accurate range, bearing, and elevation data to fire control computers.

FIRE DIRECTION CENTER.

That element of a command post, consisting of gunnery and communication personnel and equipment by means of which the commander exercises fire direction and/or fire control. The fire direction center receives target intelligence and requests for fire and translates them into appropriate fire direction.

FIRE REPEATER.

Circuit by which fire alarms may be reported from any subscribers line by dialing a number code which will connect the line to the fire department and to the attendant's switchboard.

FIRE SUPPORT AREA.

Appropriate station and maneuver area assigned to fire support ships from which gun-fire support for an amphibious operation is delivered.

FIRE SUPPORT COORDINATION CENTER.

Single location in which are centralized communication facilities and personnel incident to the coordination of fire support of the artillery, air, and naval gunfire.

FIRE TRUNK.

Used to permit a switchboard attendant to extend calls to the fire department.

FIREBEE.

Target missile developed for the Air Force. The nomenclature is Q-2. It is 17.3 feet long with a wing span of 11.2 feet, and it weighs 1,848 pounds. The missile is turbojet powered and uses a solid-propellant rocket for launching. It has a speed of 610 MPH at sea level, a climb rate of 8,500 feet per minute, and a ceiling of 42,500 feet. The missile can fly 575 MPH for one hour and 20 minutes at 40,000 feet. The missile probably could be adapted for tactical or reconnaissance use. It can carry a 500-pound payload.

FIREPROOFING OF CABLES.

Application of a fire-resisting covering to protect them from arcs in an adjacent cable or from fires from any cause.

FIRING.

1. In any gas or vapor filled tube, it is the process of gas ionization and the start of current flow.
2. The excitation of the device during a brief pulse.

FIRING CIRCUIT.

Circuit that provides the impulse in firing.

FIRING PASS.

Pass made by an aircraft at a target with the intent to fire weapons.

FIRING POINT.

Point at which the gas or vapor in a tube ionizes and current begins to flow. (Reference: FIRING.)

FIRING POTENTIAL.

Controlled potential at which conduction through a gas-filled tube begins.

FIRST DETECTOR.

Vacuum tube in a superheterodyne receiver in whose circuit the signal being received and the local-oscillator signal are combined to produce the IF signal.

FIRST FRESNEL ZONE.

Circular portion of a wave front transverse to the line between an emitter and a more distant point, where the resultant disturbance is being observed, whose center is the intersection of the front with the direct ray, and whose radius is such that the shortest path from the emitter through the periphery to the receiving point is one-half wave longer than the ray. A second zone, a third, etc., are defined by successive increases of the path by half-wave increments.

FIRST SELECTOR.

Selector which immediately follows a linefinder in a switch train, and which responds to dial pulses of the first digit of the called telephone number.

FISCAL YEAR.

A 12-month period beginning 1 July and ending 30 June.

FISHBONE ANTENNA.

1. Antenna consisting of a series of coplanar elements arranged in colinear pairs, loosely coupled to a balanced transmission line.
2. Directional antenna in the form of a plane array of doublets arranged transversely along both sides of a transmission line.

FISHING.

Pushing a stiff steel wire through a duct or space so that it may be used to draw through a wire, cable or line.

FISHING WIRE.

Tempered steel wire, usually of rectangular cross section, which is pushed through a conduit, or between a partition, or other inaccessible space and used to pull electric wires through that space.

FISHPAPER.

Type of fiber used in sheet form for insulating purposes where high mechanical strength is required, as in insulating transformer windings from the transformer core, insulating field coils from field poles, or insulating armature conductors of a rotating machine from the armature.

FISSION.

Splitting of an atom to produce nuclear energy.

FISSION PRODUCTS.

Elements produced by fission.

FIT.

Desired clearance between surfaces of machine parts.

FITTING.

An accessory, such as a lock nut or bushing, to a wiring system which is intended primarily to perform a mechanical rather than an electrical function.

FIVE-ELECTRODE TUBE.

A pentode.

FIX OR FIXATION.

Determination of position at sea or in the air by means of radio direction finders or other navigational equipments.

FIXED BIAS.

Bias voltage of constant value, as one obtained from batteries, a power supply, or a generator.

FIXED CAPACITOR.

Capacitor having a definite capacitance value that cannot be adjusted.

FIXED CRYSTAL.

Crystal detector in which the contact position is not adjustable.

FIXED FOCUS.

Term applied to instruments which are not provided with means for focusing. Such instruments, generally, have a wide range of accommodation which permits them to be used by the majority of observers.

FIXED LIGHT.

Light which is constant in intensity when viewed from a fixed point.

FIXED PUBLIC PRESS SERVICE.

Limited radio communication service carried on between point-to-point telegraph stations.

FIXED PUBLIC SERVICE.

Radio communication service carried on between fixed stations, open to public correspondence.

FIXED RESISTOR.

Resistor having a definite resistance value that cannot be adjusted.

FIXED SERVICE.

Service carrying on radio communication of any kind between fixed points, with the exception of broadcasting service and special service.

FIXED STATION.

1. Station in the fixed service. (A fixed station may, as a secondary service, transmit to mobile stations on its normal frequencies.)
2. Permanently located station which communicates with another fixed station.

FIXED TRANSMITTER.

Transmitter that is operated in a fixed or permanent location.

FIXED-FREQUENCY IFF.

Class of IFF equipment which responds immediately to every interrogation, thus permitting the response to be displayed on plan position indicators.

FIXED-FREQUENCY TRANSMITTER.

Transmitter designed for operation on a single carrier frequency.

FIXED-POINT FIRE ALARM THERMOSTAT.

Fire alarm thermostat designed to operate at a predetermined temperature.

FIXED-POINT SYSTEM.

(Reference: POINT.)

FIXTURE A.

Type of pole line installation by which the installation is strengthened. Two poles are spaced apart in the ground and bolted together at the top. With cross arms added, the fixture resembles the letter A.

FIXTURE H.

Similar to fixture A, but the poles are parallel and held together at the tops by cross arms. (Reference: FIXTURE A.)

FIXTURE SPLICE.

Splice used for connecting relatively small wire, as that used in electric fixtures, to a heavier wire.

FIXTURE STUD.

Fitting used to mount a lighting fixture in an outlet box. The stud is fastened to the box and the fixture is fastened to the stud by a hickey.

FL.

ITU designation for land station.

FLAG ALARM.

Semaphore-type indicator used in certain types of navigation instruments to warn that readings are unreliable.

FLAGCENT (FLAG OFFICER CENTRAL EUROPE).

FLAGS, ALPHABET.

Flags used on an international basis in visual communications to represent the letters of the alphabet.

FLAGS, NUMERAL.

Flags used in visual communications to represent numerals zero through nine.

FLAGHOIST.

Visual means of communication which involves the use of flags and pennants displayed from halyards; employed by ships and between ships and shore stations.

FLAME MICROPHONE.

One in which the action of sound waves on a flame changes the resistance between two electrodes in the flame.

FLAMEPROOF.

Used to denote wire insulation that has been treated chemically to resist fire.

FLAMEPROOF APPARATUS.

Apparatus so treated that it will not maintain a flame or will not be injured readily when subjected to flame.

FLANGE CONNECTOR.

Mechanical joint in a waveguide run employing plane flanges bolted together.

FLANGE COUPLING.

Connection between two parts of a waveguide run utilizing flanges not in mechanical contact, which introduces no discontinuity in the flow of energy along the guide.

FLANGE, PRESSURE TESTING.

Mounting with a threaded hole sweated on a cable sheath to hold a valve stem or closing plug in gas pressure work.

FLANKING EFFECT.

Effect on filter characteristics of connecting additional filters in parallel.

FLAP ATTENUATOR.

Form of attenuator in which a variable amount of loss is introduced by the insertion of movable sheet of resistive material, usually through a non-radiating slot.

FLARE.

Pyrotechnic device designed to produce either a luminous signal or illumination.

FLARE ANGLE.

Continuous change of cross section of a waveguide.

FLARE FACTOR.

Number expressing the degree of outward curvature of the horn of a loud speaker.

FLARED RADIATING GUIDE.

Arrangement for radiating waves from a guide by removing the sheath of the guide for a short distance and attaching metal flanges to the ends of the guide to accentuate the flow of radiant energy in a desired direction.

FLASH.

1. Message precedence designation. Listed under precedence designations (message).
2. NATO telephone procedure designation.

FLASH ARC.

Sudden increase in the emission of large thermionic vacuum tubes, probably due to irregularities in the cathode surface.

FLASH MAGNETIZATION.

Magnetization of a ferromagnetic object by a current impulse of such short duration.

FLASH POINT.

Temperature at which a combustible material, such as fuel or oil, gives off a vapor that will flash or ignite instantaneously.

FLASH PULSING.

Transmission of short bursts of radiation at irregular intervals by a mechanically controlled keyer.

FLASH REPORT LINES.

Lines of communication over which urgent intelligence reports are passed.

FLASH TEST.

Method of testing insulation by applying momentarily, a voltage much higher than the working voltage.

FLASH WELDING.

Welding in which an arc is first struck between the pieces to be welded. After the ends are so

heated, they are brought together and the weld completed by pressure after the current has been cutoff.

FLASHER.

Device that rapidly and automatically lights and extinguishes electric lamps. Generally, it is either a motor-driven switch or a thermal switch.

FLASHING BEACON.

Beacon having the characteristics of a flashing light.

FLASHING LIGHT.

Light having a signal consisting of one light period followed by one dark period, the duration of the light period being shorter than the duration of the dark period and the complete cycle being consistent in character.

FLASHING OVER.

Accidental formation of an arc over the surface of a rotating commutator from brush to brush. Usually caused by faulty insulation between commutator segments.

FLASHING SUPERVISORY.

Telephone switchboard circuit which enables the subscriber to quickly regain the operator's attention automatically starting the supervisory cord circuit lamp flashing rapidly.

FLASHOVER.

Disruptive discharge around or over the surface of a solid or liquid insulator.

FLASHOVER VOLTAGE.

The highest value attained by any voltage impulse which causes flashover.

FLAT.

Radar sensitivity-time control adjustment of maximum depression of gain.

FLAT FADING.

Fading in which all components of the received radio signal fluctuate in the same proportion simultaneously.

FLAT LINE.

Radio-frequency transmission line, or part thereof, having a low standing wave ratio.

FLAT TOP.

Horizontal portion of an antenna.

FLAT-TOP ANTENNA.

One having two or more lengths of wire parallel to each other and in a plane parallel to the ground.

FLAT-TOP RESPONSE.

Response characteristic in which a definite band of frequencies is transmitted uniformly.

FLD (FIELD).

1. Area or solid angle picked up by the lens system of the television camera. Also the area covered during one vertical sweep of the scene by the scanning element. In normal scanning where one line touches the next, the field is the entire scene being televised. In double interlaced scanning, the field is half the area of the scene. In triple interlaced scanning, the field is one third the area of the scene.

2. General term applying to a region under the influence of some physical agency, such as electricity, magnetism, or a combination, produced by an electrically charged object, by electrons in motion, or by a magnet.

FLE.

ITU designation for telemetering land station.

FLEET.

Organization of ships and aircraft under one commander, normally comprising all types of ships and aircraft necessary for major operations.

FLEMING VALVE.

Early name for a two-electrode thermionic vacuum tube used as a detector.

FLEMING'S RULE.

If the thumb, first, and second fingers are extended at right angles to one another, with the thumb representing the direction of motion, the first finger representing the direction of magnetic lines of force, and the second finger representing the direction of the current, then (a) the right hand will give the correct relations for a conductor in the armature of a generator, (b) the left hand will give the correct relations for

a conductor in the armature of a motor. This rule is applied to so-called conventional current flow, which is the opposite of electron flow.

FLEWELLING CIRCUIT.

Early radio circuit in which one tube served simultaneously as a detector, amplifier, and local oscillator.

FLEXIBLE COUPLING.

1. Device for connecting two shafts end to end and permitting rotation even though the two shafts are not exactly aligned.

2. Mechanical connection between two lengths of waveguide normally lying in a straight line, designated to allow a limited angular movement between the axes.

FLEXIBLE METAL CONDUIT.

Flexible metal tubing used to protect insulated wires in buildings or for bringing electric power to electric or electronic equipment.

FLEXIBLE RESISTOR.

Wire-wound resistor having the appearance of a flexible lead. It is made by winding Nichrome resistance wire around a length of asbestos or other heat-resistant cord, then covering the winding with a braided insulating covering. This covering is generally RMA color coded to indicate the resistor value.

FLEXIBLE SHAFT.

Shaft that transmits rotary motion at any angle up to about 90°. Used in electronic equipment to permit mounting adjustable controls at optimum positions.

FLEXIBLE TOWER.

Tower which is dependent on the line conductors for longitudinal stability but is designed to resist transverse and vertical loads.

FLEXIBLE TUBING.

Mechanical protection for electric conductors which consists of a flexible circular tube having a smooth interior and a single or double wall of nonconducting fibrous material treated to make it flame-resistant and moisture-repellent.

FLH. ITU designation for hydrological and meteorological land station.

FLI. (FLIGHT LEADER IDENTIFICATION).

FLICKER.

Sensation produced when the field frequency is insufficient to produce complete fusion of the visual images.

FLICKER EFFECT.

Small variations in the plate current of a thermionic vacuum tube, believed to be due to random emission of positive ions by the cathode.

FLICKER PHOTOMETER.

Device in which illumination from the light source being measured and a standard light source is observed alternately in rapid succession. When the standard source has been made equal to the other, the flickering effect disappears.

FLIGHT.

1. In Naval and Marine Corps usage, a specified group of aircraft usually engaged in a common mission.

2. Basic tactical unit in the Air Force, consisting of four or more aircraft in two or more elements.

3. Single aircraft airborne on a nonoperational mission.

ORGANIZATION. Air Force unit which, because of its size, is dependent upon some other organization for administrative and logistic support. A flight may be a segment of a T/O or T/D unit, and removed from the physical location of the headquarters of its parent unit. However, a flight may have its own authorization.

FLIGHT ALTITUDE.

1. Vertical distance above a given datum of an aircraft in flight.

2. In aerial photography, the datum is usually the mean ground level of the area being photographed.

FLIGHT INFORMATION CENTER.

Unit established to provide flight information service and alerting service.

FLIGHT INFORMATION REGION.

Airspace of defined dimensions within which flight information service and alerting services are provided.

FLIGHT INFORMATION SERVICE.

Service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

FLIGHT LINE.

Line drawn on a map or chart to represent the track over which an aircraft has been flown or is to be flown.

FLIGHT PLAN INTERPHONE SYSTEM.

Communication system designed to facilitate rapid passage of flight plans to interest and/or action agencies.

FLIGHT PATH.

Path in space planned for an aircraft flight.

FLIGHT PATH DEVIATION.

Difference between the flight track of an aircraft and the flight path, expressed in terms of either angular or linear measurement.

FLIGHT PATH SELECTOR.

Instrument used with a flight path computer to present the values defining the flight path to a way point.

FLIGHT-PATH COMPUTER.

Computer which performs all of the functions of a course-line computer, and in addition, provides means for controlling the altitude of an aircraft in accordance with a desired plan of flight.

FLIGHT PLAN.

Statement of the intended flight plan and procedures to be followed on a particular flight submitted by pilots to air-control facilities. The statement is then forwarded to the direction center for use by the identification branch.

FLIGHT TEST STATION.

Aeronautical station used for the transmission of essential communications in connection with the test of aircraft or major components of aircraft.

FLIGHT TRACK.

1. Path in space actually traced by an aircraft.
2. Three-dimensional equivalent of track.

FLIGHT VISIBILITY.

Average horizontal distance that prominent objects may be seen from the cockpit when aircraft is in flight.

FLINDERS BAR.

Bar of soft iron placed in the correct position near a compass to correct errors due to variation of the vertical component of the earth's magnetism in different parts of the world.

FLINT GLASS.

One of the two principal types of optical glass, the other being crown glass. Flint glass is softer than crown glass, has a higher index of refraction, and higher dispersion. (Reference: COMPOUND LENS.)

FLIP COIL.

Small coil used to measure a magnetic field. It is connected to a ballistic galvanometer or other instrument, and gives an indication when the magnetic field or the position of the coil in the field is suddenly reversed.

FLIP-FLOP.

1. Device having two stable states and two input terminals (or types of input signals) each of which corresponds with one of the two states. The circuit remains in either state until caused to change to the other state by application of the corresponding signal.
2. A similar bi-stable device with an input which allows it to act as a single-stage binary counter.

FLIP-FLOP CIRCUIT.

Electronic trigger circuit having two conditions of permanent stability, with means for passing from one to the other by an external stimulus.

FLIP-FLOP MULTIVIBRATOR.

Biased rectangular wave generator which operates for one cycle when a synchronizing trigger signal is applied.

FLOAT SWITCH.

Switch actuated by a float at the surface of a liquid.

FLOATED BATTERY.

Storage battery kept in a state of full charge across the leads of a generator. The generator carries the load but the battery absorbs any peak loads.

FLOATING.

Method of operation for storage batteries in which the battery is connected in parallel with an electric supply, serving as a standby in case of supply failure and assisting the supply in handling peak loads.

FLOATING CARRIER SYSTEM.

Method of radio transmission in which the percentage modulation is held constant by varying the amplitude of the carrier wave to offset variations in the strength of the modulating wave.

FLOATING CHARGE.

Continuous charging of a storage battery at a low current value to keep the battery fully charged while it is standing idle or on light duty.

FLOATING GRID.

Vacuum-tube grid that is not connected to any circuit. It assumes a negative potential with respect to the cathode.

FLOATING NEUTRAL.

One whose voltage to ground is free to vary when circuit conditions change.

FLOATING-POINT SYSTEM.

In positional notation, the character, or the location of an implied symbol, which separates the integral part of a numerical expression from its fractional part. For example, it is called the binary point in binary notation. If the location of the point is assumed to remain fixed with respect to one end of the numerical expression, a fixed-point system is being used. If the location

of the point does not remain fixed with respect to one end of the numerical expression, but is regularly recalculated, then a floating-point system is being used.

Note. A fixed-point system usually locates the point by some convention, while a floating-point system usually locates the point by expressing a power of the base.

FLOCK.

Finely divided felt used on phonograph turntable surfaces, underneath microphone stands, and in similar locations where a nonscratching surface is desired.

FLOGWING (FLEET LOGISTIC AIRWING).**FLOOD LIGHTING.**

Covering a wide area with radiation.

FLOOD PROJECTION.

Optical method in which the subject facsimile copy is illuminated and the scanning spot is delineated by an aperture between the subject copy and the light-sensitive device.

FLOOR MARKERS.

Round metal discs set into the floor; used to establish base-reference lines for locating equipment.

FLORIDA OPEN AREA.

One of two specifically designated areas within which the ready identification of airborne objects is not required except during periods of air defense emergency.

FLOT (FLOTILLA).

Small fleet of vessels.

FLOTROL.

Type of dry-disc rectifier.

FLOW.

Passage of electrons (a current) through a conductor or through space between electrodes.

FLOW DIAGRAM.

Graphical representation of a program or a routine as in an electronic computer.

FLOW METER.

Device for measuring the rate of flow of liquids or gases.

FLOWED-WAX PLATTER.

Disk base (usually metal) upon which wax is flowed.

FLI (FLIGHT).

1. Trip or mission by aircraft.
2. Formation of aircraft.
3. AF organizational entity which exists or functions as a subdivision of a squadron.

FLT/FLE (FLEET).

1. Group of aircraft, ships, or aircraft and ships under one command.
2. Entire lot of aircraft belonging to one owner.

FLUCTUATING CURRENT.

Direct current that changes in value but not at a steady rate.

FLUCTUATION NOISE.

Any noise whose spectral characteristics are the same as those of thermal noise. It includes thermal noise and shot noise as special cases.

FLUCTUATION VOLTAGE.

Small voltage variations occurring in a thermionic tube due to such causes as thermal agitation, shot effect, or flicker effect.

FLUCTUATIONS.

Variations in value, such as of pressure, velocity, etc.

FLUOREMETER.

Instrument for measuring fluorescence.

FLUORESCENCE.

Phenomenon whereby light of one wave length is absorbed by a material and then re-emitted as light of a different wave length. (Reference: PHOSPHORESCENCE.)

FLUORESCENT LAMP.

Basically an electric discharge lamp, in which ionization of the gas produces radiation that activates the fluorescent material on the inside of the glass tubing. The radiant energy from the electric discharge is transferred by suitable materials (phosphors in the fluorescent coating) into wave lengths giving more light (higher luminosity).

FLUORESCENT MATERIAL.

Material that fluoresces readily when exposed to electron beams, X-rays, radium, or other radiation.

FLUORESCENT SCREEN.

Thin coating of chemical material on the face of the cathode-ray tube. This material is chosen for its ability to transform electron energy into visible light. When the screen is bombarded by high-velocity electrons, light is given off, the color of the light being dependent on the type of material used in the screen.

FLUORIDE GLASS.

Nonsilica glass used in photographic optics.

FLUOROSCOPE.

Device consisting of a fluorescent screen suitably mounted, either separately or in conjunction with an X-ray tube, by means of which X-ray shadows of objects interposed between the tube and the screen are made visible.

FLUOROSCOPY.

The use in diagnosis, testing, etc., of a fluorescent screen which is activated by roentgen rays.

FLUSH RECEPTACLE.

Receptacle or outlet that is recessed in a wall, so that only the plate extends beyond the surface of the wall.

FLUSH-TYPE INSTRUMENT.

Instrument which is designed to be mounted with its face projecting only slightly beyond the front of the panel.

FLUTTER.

1. Variation in transmission level, unwanted, resulting from the effect of telegraph or signaling currents in changing the reactance of loading coils or transformers; frequency accompanied also by simultaneous variations in waveform distortion.
2. Distortion due to variation in loss resulting from the simultaneous transmission of a signal at another frequency.
3. Similar effect due to phase distortion.

4. Distortion occurring in sound reproduced from movie film when there is nonuniform motion of the film feed mechanism in the sound head, or occurring in a recording system due to nonuniform speed of the recorder or reproducer turntable.

5. Frequency modulation caused by spurious variations in recording velocity.

6. Rapid variation in the loudness of the tone in the synchronous motor caused by shunting.

FLUX.

1. Material used to promote fusion or joining of metal in soldering, welding, or smelting. Rosin is widely used as a flux in electric soldering.

2. General term used to designate collectively all the electric or magnetic lines of force in a region.

FLUX DENSITY.

Number of magnetic lines of force passing through a given area.

FLUXGATE.

Magnetic azimuth-sensitive element of the fluxgate compass system which is activated by the earth's magnetic field.

FLUXGATE COMPASS.

1. Gyrostabilizer, remote indicating compass which is used as a compass and azimuth control system in conjunction with automatic pilots.

2. Gyroscope-stabilized compass used for supplying stabilization information concerning the geographical orientation of the PPI pattern.

FLUXGRAPH.

Machine that automatically plots on paper the magnetic field strength at various points in the vicinity of a coil.

FLUXMETER.

Instrument that provides indirect measurements of magnetic field density (flux density) by using some other physical quantity. In one common form, a conventional ammeter is calibrated in gauss, and through this meter is passed a

current the amplitude of which is adjusted in accordance with the magnitude of the magnetic field being measured.

FLY-BACK.

Portion of the time base during which the spot is returning to the starting point. This is usually not seen on the screen of the cathode-ray tube, because of gating action or the rapidity with which it occurs. (Reference: RETRACE.)

FLYING SPOT.

Moving spot of light that scans the subject being televised.

FLYWHEEL.

Wheel on the end of the crankshaft which gives the crankshaft momentum.

FM (FREQUENCY MODULATION).

1. Angle modulation of a sine-wave carrier in which the instantaneous frequency of the modulated wave differs from the carrier frequency by an amount proportional to the instantaneous value of the modulating wave.

2. VHF type marker (100 watts).

Note. Combinations of phase and frequency modulation are commonly referred to as frequency modulation.

FM DOPPLER.

Type of radar involving frequency modulation of both carrier and modulation on radial sweep.

FM RADAR.

System in which the radiated wave frequency is varied continuously. The difference in frequency between the radiated and received signal is then used as a measure of range.

FM-PM.

System in which the several frequency modulated subcarriers is used to phase-modulate a second carrier.

FMACC. (FOREIGN MILITARY ASSISTANCE COORDINATING COMMITTEE).**FMASC (FOREIGN MILITARY ASSISTANCE STEERING COMMITTEE).**

FOCAL LENGTH.

Distance from the principal focus (focus of parallel rays of light) to the surface of a mirror or the optical center of the lens.

FOCAL PLATE SHUTTER.

Device that prevents light from reaching the light-sensitive surface in an ordinary or television camera, except during the desired period of exposure.

FOCOMETER.

Instrument for measuring the focal length of a lens or of an optical system.

FOCUS.

1. To make appropriate electrical adjustments in order to give a sharp image of sweep line or signals on the face of a cathode-ray tube.
2. Point toward which rays of light converge to form an image after passing through a converging lens.
3. To adjust the eyepiece of a telescope so that the image is clearly seen by the eye, or to adjust the lens of a camera so that a sharp, distinct image is seen on the ground glass.
4. Process of adjusting the distances between optical elements.

FOCUSING ANODE.

One of the electrodes in a cathode-ray tube, the potential of which may be varied to focus the electron beam. Varying the potential changes the electric field, and thereby alters the path of the electrons to change the spot size.

FOCUSING COIL.

Coil surrounding the neck of a cathode-ray tube, used to provide a magnetic field, parallel to the electron beam, that controls the cross-sectional area of the beam at the fluorescent screen.

FOCUSING CONTROL.

Control that adjusts the size of the visible spot produced on the screen of a cathode-ray tube in a television system or an oscilloscope.

FOCUSING ELECTRODE.

Electrode to which a potential is applied to control the cross-sectional area of the electron beam in a cathode-ray tube.

FOCUSING NUT.

Threaded nut to which the eyepiece of a telescope is attached to permit the eyepiece to be moved in or out to accommodate the instrument to eyesight variations.

FOCUSING SLEEVE.

Knurled sleeve which is rotated to shift the positions of the erectors with relation to the objective and eyepiece to focus the instrument or to change its magnification.

FOE.

Designation light to indicate foe on IFF.

FOG CHAMBER.

Inclosure, containing air supersaturated with water vapor by sudden expansion, in which rapidly moving particles are revealed by streaks of droplets called cloud tracks.

FOI (FLIGHT OFFICER INTERCEPTOR).

SAGE center member of the battle staff responsible for all matters pertaining to manned interceptors.

FOIL.

Thin flexible sheet of aluminum, lead, tin, zinc, or other metal.

FOLDBACK.

Altitude-gaining tactic employed by an interceptor when so instructed by an intercept director. It is used if an altitude deficiency would exist where direct course to interception is employed.

FOLDED CAVITY.

Arrangement used in a klystron repeater to make the incoming wave act on the electron stream from the cathode at several places and produce a cumulative effect.

FOLDED DIPOLE.

Antenna composed of two parallel dipoles connected together at the ends with connections to receiver and transmitter made at the center of one of the dipoles.

FOLDED DIPOLE ANTENNA.

Primary radiating element consisting of two parallel dipoles, separated by a small fraction of the

wave length, connected together at their outer ends, and fed at the center of one dipole.

FOM (FIGHTER OFFICER MISSILE).

SAGE center member of the battle staff responsible for all matters pertaining to Air Force missiles.

FOOT-CANDLE.

Light intensity of a candle at a distance of one foot.

FOOT-LAMBERT.

Surface brightness of one lumen per square foot.

FOOT-POUND.

Unit of measurement equivalent to the work of raising one pound vertically a distance of one foot.

FOOTINGS.

Structures set in the ground to support the bases of towers, poles, or other overhead structures.

FOR. (FORCE).

(Reference: FORCE.)

FORBIDDEN-COMBINATION CHECK.

(Reference: CHECK, FORBIDDEN-COMBINATION).

FORCE.

1. Body of troops, ships, or aircraft, or combination thereof.
2. In naval usage, a major subdivision of a fleet.
3. Any physical cause which is capable of modifying the motion of a body. The vector sum of the forces acting on a body at rest or in uniform rectilinear motion is zero.

FORCED DRAINAGE.

Method of controlling electrolytic corrosion of underground metallic structures whereby an external source of dc potential is employed.

FORCED VIBRATION.

Nonresonant vibration produced in a body or system by some external vibrating or oscillatory force, which also controls the frequency of the vibration.

FORDIO.

Forecast conditions of radio propagation conditions.

FOREIGN EXCHANGE.

Any telephone company exchange other than the one from which the Air Force switchboard would normally be served.

FOREIGN EXCHANGE LINE.

Subscriber line by means of which service is furnished to a subscriber at his request from an exchange other than the one from which service would normally be furnished.

FOREIGN NATIONALS.

Pertaining to safeguarding military information; all persons not citizens of the United States who are acting either in the United States or in a foreign country as representatives, officials, or employees of a foreign government, firm, corporation, or individual.

FORESTRY STATION.

Station used for radio communications necessary for the prevention and suppression of forest fires.

FORGING.

Process of deforming metal at high temperature by intermittent pressure. Hammer forging; press forging; drop forging.

FORK BEAT.

Amplitude variation caused by undesired pickup of the fork oscillator frequency in the signal amplifier circuits. The beat rate is the difference in frequency between the received signal and local fork oscillator.

FORK HEEL.

Base of a tuning fork.

FORK OSCILLATOR.

Oscillator which uses a tuning fork as the frequency determining element.

FORK TINES.

Projecting ends of the tuning fork which are vibrated to produce a constant frequency.

FORM.

Term used in crystallography to refer to a group

of identical crystal faces present on a crystal. All of the crystal faces which comprise the form have a like position relative to the axis or planes of symmetry.

FORM, CABLE.

Arrangement of cable end by lacing with cord and fanning the ends into skimmers so they will fit apparatus terminations or terminal blocks.

FORM FACTOR OF A SYMMETRICAL ALTERNATING QUANTITY.

Ratio of the effective value of the quantity to its half-period average value.

FORM LINES.

Lines having the same appearance as contour lines but which have been sketched from visual observation to show the shape of the terrain rather than the elevation.

FORM-WOUND COIL.

Armature coil that is formed or shaped over a fixture before being placed on the armature of a motor or generator.

FORMATION VOLTAGE.

Final impressed voltage at which the film is formed on the valve metal in an electrochemical valve.

FORMICA.

Phenolic compound having good insulating qualities.

FORMING.

Process which results in a change in impedance at the surface of a valve metal to the passage of current from metal to electrolyte, when the voltage is first applied.

FORTUITOUS DISTORTION.

1. In a teletypewriter transmission system, it is the random displacement, splitting, and/or breaking up of the mark and space elements.
2. Random distortion of telegraph signals such as that commonly produced by interference.

FORTY-FOUR TYPE REPEATER.

Type of telephone repeater employing two amplifiers and no hybrid arrangements. It is used in a four-wire system.

FORWARD AIR CONTROLLER.

Officer in charge of the tactical air control party. Being a combat experienced fighter pilot familiar with the problems of air strikes against ground targets, he actually directs aircraft into front line targets.

FORWARD AREA.

General term to designate an area in proximity to combat.

FORWARD BOMBLINES.

Bomb safety lines (land) prescribed by a troop commander beyond which he considers that bombing need not be coordinated with his own forces.

FORWARD CURRENT.

Current which flows upon application of forward voltage.

FORWARD SCATTER.

1. Propagation of electromagnetic waves at frequencies above the maximum usable high frequency through use of the scattering of a small portion of the transmitted energy when the signal passes from an un-ionized medium into a layer of the ionosphere.
2. Term referring collectively to VHF (APIS) and UHF (FPTS) communications techniques taking advantage of atmospheric ducting and scattering.

FORWARD TELLING.

Process of communicating tactical and air-surveillance data to a higher echelon of command; communication may be verbal or automatic.

FORWARD VOLTAGE.

Voltage of that polarity which produces the larger current.

FORWARD-ACTING REGULATOR.

Transmission regulator in which the adjustment made by the regulator does not affect the quantity which caused the adjustment.

FOSTER'S REACTANCE THEOREM.

Driving-point impedance of a finite two-terminal network composed of pure reactances is a reactance which is an odd rational function of frequency and which is completely determined,

except for a constant factor, by assigning the resonant and anti-resonant frequencies. In other words, the driving point impedance consists of segments going from minus infinity to plus infinity (except that at zero or infinite frequency, a segment may start or stop at zero impedance). The frequencies at which the impedance is infinite are termed poles and those at which the impedance is zero are termed zero.

FOT (OPTIMUM TRAFFIC FREQUENCY).

The most effective frequency at a specified time for ionospheric propagation of radio waves between two specified points.

Note. In predictions of useful frequencies the optimum working frequency is commonly taken as 15 per cent below the monthly median value of the maximum usable frequency, for the specified time and path.

FOUCAULT CURRENTS.

Eddy currents.

FOUR WHEELS.

Project for equipping AACS mobile units with medium weight mobile equipment. The name is derived from the fact that the equipment will be mounted on four-wheel vehicles. These units will be authorized both medium and light-weight equipment, depending upon the organization and mission of the particular unit. The project for providing the light equipment is called two wheels since the equipment will be mounted on two-wheel vehicles. The medium weight facilities have been designed to provide sustained communications support. By contrast, the light-weight equipment has been designed more for mobility than sustained operation. The medium units are composed of more substantial components and provide greater operational capability. The equipment has been designed so that the trailer may be transported in medium-size cargo aircraft with a minimum of disassembly and preparation.

FOUR-ADDRESS CODE.

Artificial language for describing or expressing the instructions which can be carried out by a digital computer. In automatically sequenced

computers, the instruction code is used when describing or expressing sequences of instructions, and each instruction word usually contains a part specifying the operation to be performed and one or more addresses which identify a particular location in storage. Sometimes an addressed part of an instruction is not intended to specify a location in storage but is used for some other purpose. If more than one address is used, the code is called a multiple-address code. In a typical instruction of a four-address code, the addresses specify the location of two operands, the destination of the result, and the location of the next instruction in the sequence. In a typical three-address code, the fourth address specifying the location of the next instruction is dispensed with and the instructions are taken from storage in a preassigned order. In a typical one-address or single-address code, the address may specify either the location of an operand to be taken from storage, the destination of a previously prepared result, or the location of the next instruction. The arithmetic element usually contains at least two storage locations, one of which is an accumulator. For example, operations requiring two operands may obtain one operand from the main storage and the other from a storage location in the arithmetic element which is specified by the operation part.

FOUR-WIRE CIRCUIT.

Two-way circuit using two paths so arranged that communication currents are transmitted in one direction only on one path and in the other direction on the other path. The transmission paths may or may not employ four wires.

FOUR-WIRE REPEATER.

Telephone repeater operating in a circuit which transmits in one direction on one pair of wires and in the other, on another pair.

FOUR-WIRE TERMINATING SET.

Hybrid arrangement by which four-wire circuits are terminated on a two-wire basis for interconnection with two-wire circuits.

FOURIER THEOREM.

Any finite periodic motion may be analyzed into components, each of which is a simple harmonic motion of definite and determinable amplitude and phase.

FP (FIREPROOF (ED)).

FPIS (FORWARD PROPAGATION BY IONOSPHERIC SCATTER).

Radio communication technique utilizing the scattering phenomenon exhibited by electromagnetic waves in the 30-to-100 mc region when passing through the ionosphere at an elevation of about 85 kilometers. Since only a small portion of the signal is reflected back to earth it is necessary to use high power transmitters, highly directional antennas, and sensitive low-noise receivers. A typical installation uses the AN/FRT-6 transmitter, corner reflector antennas, and specially built receivers. Higher signal-to-noise ratios in the lower frequencies of 30-45 mc permit multiplexing up to eight teletype channels, or four teletype channels and one voice channel. FPIS is further characterized by its propagation reliability (estimated at 98%), defined path lengths between 600 and 1450 miles, and critical siting requirements.

FPTS (FORWARD PROPAGATION BY TROPOSPHERIC SCATTER).

Radio communications technique utilizing scattering and ducting phenomenon of the troposphere, occurring in the region up to 25 kilometers. Ducting, governed principally by temperature and humidity, permits communication over distances up to 300 miles in contrast to conventional line-of-sight microwave operating in the same frequency range. Because of high path losses, it is necessary to use high power amplifiers and high gain antennas. A typical installation would use a 10-kc transmitter feeding a 28-foot or 60-foot dish antenna. Siting problems are not normally critical; however, mutual interference possibilities must be given close attention. FPTS circuits are characterized by high channel capacity and reliability. A typical circuit would support 36 voice channels with 99-percent reliability.

FR.

ITU designation for receiving station only, connected with the general network of telecommunication channels.

FRAME.

1. In television, the total area, occupied by the picture, which is scanned while the picture signal is not blanked.
2. In air defense operations, a continuous, repetitive time cycle during which air-defense functions are carried out by a computer.

INTERMEDIATE. Distributing frame on which the subscriber line multiples appear on one side and the subscriber line circuit on the other for interconnection.

MAIN, TYPE B. Distributing frame carrying on one side (vertical) all outside lines and protective devices for those lines, and on the other (horizontal), all connections of the outside lines toward the central office equipment.

TYPE A. Distributing frame carrying on one side (horizontal) all outside lines, and on the other side (vertical), the terminations of the central office equipment and protective devices for them.

FRAME FREQUENCY.

In television, the number of times per second that the frame is scanned.

FRAME OF REFERENCE.

Set of points, lines, or planes used as a system of reference for defining space coordinates.

FRAMER.

Device for adjusting the facsimile equipment so that the recorded elemental area bears the same relation to the record sheet as the corresponding transmitted elemental area bears to the subject copy in the direction of line progression.

FRAMES.

Steel supports upon which the various relay, switch and terminal equipment is mounted.

FRAMING.

1. Adjustment of the picture to a desired position with respect to the field of view, generally a central position.
2. Term applied to the preparation of a pole, consisting of roofing, cutting gains, and boring holes for bolts.

AUXILIARY. Grid of iron bars fastened to the ceiling from which the cable and relay racks are supported.

FRAMING CONTROL.

Knob, or knobs, on the receiver for centering and adjusting the height and width of a picture.

FRAUDULENT ECHO.

1. False echo produced by use of deceptive devices.
2. Classified definition. (Reference: AFM 100-50.)

FRAUNHOFER LINES.

Dark absorption lines of the solar spectrum.

FRAUNHOFER REGION.

Region of the field in which the energy flow from an antenna proceeds essentially as though coming from a point source located in the vicinity of the antenna.

Note. If the antenna has a well-defined aperture D in a given aspect, the Fraunhofer region in that aspect is comm taken only to exists at distances greater than $2D^2/\lambda$ from the aperture, λ being the wavelength.

FREE ELECTRONS.

Electrons which are not bound to a particular atom, but found more continuously among the many atoms of a substance.

FREE FALL.

Space condition of unrestricted motion in which things act as if they were not under the influence of gravity.

FREE GRID.

Grid electrode that is left unconnected in a vacuum tube. It acquires a potential and exerts a control over plate current.

FREE IMPEDANCE.

Impedance at the input of the transducer when the impedance of its load is made zero.

FREE NET.

Net in which any station may communicate with any other station in the same net without first obtaining permission from the net control station.

FREE OSCILLATIONS.

Oscillatory currents which continue to flow in a tuned circuit after the impressed voltage has been removed. Their frequency is the resonant frequency of the tuned circuit.

FREE RADICALS.

Atoms, ionized fragments of atoms or molecules which, on combining, release enormous outputs of energy.

FREE ROUTING.

That method of traffic handling wherein messages are forwarded toward their destination over any available channel, normally the most direct without depending on a pre-determined routing doctrine.

FREE SPACE.

1. Empty space with no free electrons or ions present. It has approximately the electrical constants of air.
2. Usually refers to a condition where the radiation pattern of an antenna is not affected by surrounding objects such as earth, buildings, trees, etc.

FREE SPACE FIELD INTENSITY.

Radio field intensity that would exist at a uniform medium in the absence of waves reflected from the earth or other objects.

FREE SPACE LOSS.

Theoretical radiation loss which would occur in radio transmission if all variable factors were disregarded.

FREE SPACE TRANSMISSION.

Electromagnetic radiation over a straight-line path in a vacuum or ideal atmosphere, sufficiently removed from all objects that effect the wave in any wave.

FREE VIBRATION.

1. Vibration which exists in a system after all driving forces have been removed from the system.
2. The natural frequency vibrations in a body independent of the application of any periodic force.

FREE-RUNNING FREQUENCY.

Frequency at which a normally driven oscillator operates in the absence of a driving signal.

FREE-RUNNING MULTIVIBRATOR.

Multivibrator so arranged that it does not need a trigger pulse to start operation.

FREE-RUNNING SWEEP.

Sweep triggered continuously by an internal trigger generator.

FREE-SPACE RADIATION PATTERN.

Radiation pattern that an antenna would have if it were in free space where there is nothing to reflect, refract, or absorb the radiated waves.

FREE-SPACE RADAR EQUATION.

Equation that governs a radar signal characteristic when it is propagated between a radar set and a reflecting object or target in otherwise empty space.

FREQ (FREQUENCY).

(Reference: FREQUENCY.)

FREQUENCY.

1. Number of recurrences of a periodic phenomenon in a unit of time. In specifying the electrical frequency, the unit of time is the second, for example; the frequency is 15,000 cycles per second. Radio frequencies are normally expressed in kilocycles per second (kc/s) at and below 30,000 kilocycles per second, and in megacycles per second (mcls) above this frequency.
2. Number of complete cycles per second existing in the form of wave motion such as the number of cycles per second of an alternating current or of a sound wave.

AIR-GROUND RADIO. Specified frequency agreed upon for transmission from an aircraft station to an aeronautical ground station.

ALTERNATIVE. Frequency or group of frequencies which may be assigned for use on any channel, or on a particular channel at a certain time or for a certain purpose to replace or supplement the frequencies normally used on that channel.

ANGULAR. Frequency expressed in radians per unit of time.

ANTIRESONANT. Frequency of a crystal unit for a particular mode of vibration at which, neglecting dissipation, the effective impedance of the crystal unit is infinite.

ASSIGNED. Frequency coinciding with the center of the frequency band in which the station is authorized to operate.

AUTHORIZED. Portion of the radio spectrum, the width of which is the necessary bandwidth of emission plus twice the prescribed frequency tolerance.

BASE. Frequency, in any wave, which is considered to be the most important. In a driven system, it would in general be the driving frequency, while in most periodic waves it would correspond to the fundamental frequency.

BEAT. One of the two additional frequencies generated when signals of two different frequencies are combined. The beat frequencies are equal to the sum and the difference of the two original frequencies.

CARRIER. 1. Frequency of an unmodulated carrier wave.

2. Number of cycles per second (frequency) of a carrier wave. For a radio station it is the frequency assigned by the Federal Communications Commission.

3. Of periodic carrier, the reciprocal of its period. (Reference: PULSE REPETITION FREQUENCY.)

CENTER. 1. Average frequency of the emitted wave when modulated by a symmetrical signal.

2. Initial frequency of the carrier wave of an FM transmitter before modulation.

COLLISION. Number of collisions between an electron and a molecule of a gas per unit time. It is dependent on the velocity of the electron and the mean free path between molecules.

COMBAT SCENE OF ACTION. Simplex channel for tactical communications in combat operations in which two or more elements of the same or different arms are employed in circumstances precluding the prior agreement of a communication plan.

CRITICAL. In radio propagation by way of the ionosphere, the limiting frequency below which a wave component is reflected by, and above which it penetrates through and ionospheric layer of vertical incidence.

EFFECTIVE CUT-OFF. Of an electric structure, a frequency at which its insertion loss between specified terminating impedances exceeds by some specified amount the loss at some reference point in the transmission band.

FRAME. Television rate (30 frames per second) at which a complete image is scanned.

FREE-RUNNING. Frequency at which a normally driven oscillator operates in the absence of a driving signal.

FUNDAMENTAL. Of a periodic quantity, the frequency of a sinusoidal quantity which has the same period as the periodic quantity.

IMAGE. In heterodyne frequency converters in which one of the two sidebands produced by beating is selected, the image frequency is an undesired input frequency capable of producing the selected frequency by the same process. The word image implies the mirror-like symmetry of signal and image frequencies about the beating oscillator frequency or the intermediate frequency, whichever is the higher.

INFRASONIC. Frequency lying below the audio-frequency range.

INTERMEDIATE. Frequency to which a signaling wave is shifted locally as an intermediate step in transmission or reception.

LINE. Television; number of times per second that a fixed vertical line in the picture is crossed in one direction by the scanning spot. Scanning during vertical return intervals is counted.

LOBING. Number of times a lobing pattern is repeated per second.

LOWEST USEFUL HIGH. Lowest high frequency effective at a specified time for ionospheric propagation of radio waves between two specified points.

MAXIMUM USABLE. Upper limit of the frequencies that can be used at a specified time for radio transmission between two points and involving propagation by reflection from the regular ionized layers of the ionosphere.

NATURAL ANTENNA. Lowest resonant frequency without added inductance or capacitance.

OPTIMUM TRAFFIC. Most effective frequency specified time for ionospheric propagation of radio waves between two specified points (commonly taken as 85% of the monthly median value of MUF for the specified time and path).

PRIMARY. Frequency assigned for normal use in a particular circuit.

PULLING. Tendency of any load to change the frequency of an oscillator.

RESONANT. 1. Of a crystal unit, frequency for a particular mode of vibration to which, discounting dissipation, the effective impedance of the crystal unit is zero.

2. That frequency, for a given resonant circuit, at which the inductive reactance is equal to the capacitive reactance.

RESTING. Initial frequency of the carrier wave of an FM transmitter before modulation.

RIPPLE. Frequency of the ripple current; twice the supply frequency, in the case of a full-wave rectifier, and a function of the number

of poles and the speed, in the case of a generator.

SCENE OF AIR RESCUE. Simplex channel for inter-communication between aircraft and surface vessels (including submarines) engaged in and at the scene of an air sea rescue operation.

SECONDARY. Frequency assigned for use on a particular radio circuit when primary frequency becomes unusable for any reason.

STRAIGHT LINE. Variable capacitor characteristic obtained when the rotor plates are so shaped that the resonant frequency of the tuned circuit containing the capacitor varies directly in proportion to the angle of rotation.

THEORETICAL CUT OFF. Of an electric structure, frequency at which, disregarding the effects of dissipation, the attenuation constant changes from zero to a positive value or vice versa.

ULTRASONIC. Frequency lying above the audio-frequency range. The term is commonly applied to elastic waves propagated in gases, liquids, or solids.

VOICE. Frequency lying within that part of the audio range which is employed for the transmission of speech. Voice frequencies used for commercial transmission of speech usually lie within the range 200 to 3500 cycles per second.

FREQUENCY ALLOCATION.

Assignment of available frequencies in the radio spectrum to specific stations and for specific purposes, to give maximum utilization of frequencies with minimum interference between stations. Allocations in the United States are made by the Federal Communications Commission.

FREQUENCY BAND.

Continuous range of frequencies extending between two limiting frequencies.

FREQUENCY BAND OF EMISSION.

Frequency band required for a given type of transmission and speed of signaling.

FREQUENCY CHANGER.

Device delivering alternating current at a frequency which differs from the frequency of the supply.

FREQUENCY CHANGING CIRCUIT.

Circuit, comprising a beam oscillator and a mixer, which delivers output at one or more frequencies differing from the input frequency.

FREQUENCY CHANNEL.

Continuous portion of the frequency spectrum appropriate for a transmission utilizing a specified class of emission.

FREQUENCY CONSTANT.

Number relating a natural vibration frequency of a piezoid (finished crystal blank) to a linear dimension of the piezoid.

FREQUENCY CONTROL.

Regulation of the frequency of a generating system.

FREQUENCY CONVERSION.

Converting the carrier frequency of a received signal from its original value to the IF value in a superheterodyne receiver.

FREQUENCY CONVERTER.

Circuit or device which changes the frequency of an alternating current. (Reference: DETECTOR, MIXER.)

FREQUENCY DEMODULATION.

Process of removing the intelligence from a modulated carrier.

FREQUENCY DEPARTURE.

Amount of variation of a carrier frequency or center frequency from its assigned value.

FREQUENCY DEVIATION.

1. Change in frequency of an FM or PM signal from the nominal (or center) frequency of the carrier. (Reference: DEVIATION.)

2. In frequency modulation, the peak difference between the instantaneous frequency of the modulated wave and the carrier frequency.

FREQUENCY DEVIATION METER.

Instrument that indicates the number of cycles a transmitter has drifted from its assigned carrier frequency.

FREQUENCY DISCRIMINATION.

Type of distortion occurring when different frequency components in a signal undergo unequal amplification or attenuation.

FREQUENCY DISCRIMINATOR.

Discriminator circuit that converts a frequency-modulated signal into an amplitude-modulated signal or a varying direct current.

FREQUENCY DISTORTION.

1. Distortion which occurs as a result of failure to amplify or attenuate equally all frequencies present in a complex wave.
2. Impairment of fidelity introduced by a transducer as a result of the unequal transfer of frequencies (e.g., unequal amplification of frequencies within the pass band of an amplifier).

FREQUENCY DIVERSITY.

Term used to designate any method of transmission and/or reception used to minimize the effects of frequency fading.

FREQUENCY DIVERSITY RECEPTION.

That form of diversity reception which utilizes transmission at different frequencies.

FREQUENCY DIVIDER.

Device for delivering an output wave whose frequency is a proper fraction, usually a submultiple, of the input frequency.

FREQUENCY DIVISION MULTIPLEX.

Process or device in which each signal channel modulates a separate subcarrier, the subcarriers being spaced in frequency to avoid overlapping of the subcarrier sidebands, and the selection and demodulation of each signal channel on the basis of its frequency.

FREQUENCY DIVISION MULTIPLEXING.

Process of transmitting two or more signals over a common path by using a different frequency band for each signal.

FREQUENCY DOUBLER.

1. An electron-tube stage of a transmitter having a resonant plate circuit tuned to the second harmonic of the input frequency. Frequency of the output signal is then twice that of the input signal.
2. An amplifier whose output circuit is resonant to the second harmonic of the input signal. The output frequency is double that of the input.

FREQUENCY DRIFT.

Slow variations in the output frequency of an oscillator or transmitter caused by changes in the circuit components as a result of temperature effects.

FREQUENCY FROGGING.

Normally used in carrier repeaters to prevent singing and reduce cross-talk. Modulators in the repeater and the associated filter networks translate the frequency bands to low group from high group in the repeater. In frequency frogging, large benefits also result for system equalization and regulation. Because of the frequency inversion taking place in the modulation step of the frequency frogging process, channels in alternate repeater sections occur successively at low group and high group. This results in nearly constant attenuation with frequency over two successive wire or cable repeater sections. This eliminates the need for large basic slope equalization and slope adjustment for weather changes.

FREQUENCY INTERLACE.

Carrier chrominance signal frequency chosen so that I and Q sidebands are interwoven with luminance sidebands in same bandwidth in a manner which causes no mutual interference. Color television term.

FREQUENCY METER.

1. An instrument for measuring the frequency of an alternating current. Its scale is usually graduated in cycles, kilocycles, or megacycles.
2. A device which is calibrated to indicate the frequency of a radio wave to which it is tuned.

ABSORPTION. Frequency-measuring device, incorporating variable circuit, which absorbs a small portion of the radiated energy under measurement. (Reference: WAVE METER.)

FREQUENCY MODULATED CARRIER CURRENT TELEPHONY.

Telephony involving the use of a frequency-modulated carrier signal transmitted over power-line wires or other wires.

FREQUENCY MODULATED RADAR.

Form of radar in which the radiated wave is frequency-modulated and the returning echo beats with the wave being radiated, thus enabling range to be measured.

FREQUENCY MODULATED TRANSMITTER.

One which transmits a frequency-modulated wave.

FREQUENCY MODULATED WAVE.

Carrier wave whose frequency is varied coincident with the amplitude of the modulating signal.

FREQUENCY MODULATION.

1. Process of superimposing intelligence upon a radio frequency carrier by varying the frequency of the carrier in accordance with the amplitude and frequency of an audio signal.
2. Angle modulation in which the instantaneous frequency of a sine wave carrier is caused to depart from the carrier frequency by an amount proportional to the instantaneous value of the modulating wave.
3. (Facsimile) A carrier wave whose frequency is varied above and below the nominal frequency in accordance with a signal wave. The voice or AM facsimile signal is usually applied directly to the modulator with this system.

FREQUENCY MONITOR.

Instrument for indicating the deviation of a frequency from its assigned value.

FREQUENCY MULTIPLIER.

1. Device for delivering an output wave whose frequency is a multiple of the input frequency. Frequency doublers and triplers are special cases of frequency multipliers.

2. An amplifier circuit which amplifies a harmonic. Its output frequency is some multiple of the original frequency.

FREQUENCY PREDICTION CHART.

Graph showing curve for the MUF, OMF, and LUF for various times throughout a 24 hour period plotting a radio wave between two specific points.

FREQUENCY PULLING.

Small changes in frequency of an oscillator caused by changes in load impedance. (Reference: PULLING.)

FREQUENCY RANGE.

1. In a transmission system, those frequencies at which the system is able to transmit power without attenuating it more than an arbitrarily specified amount.
2. In a receiver, the frequency band over which the receiver is designed to operate, covering those frequencies the receiver will readily accept and amplify.
3. A specifically designated part of the frequency spectrum.

FREQUENCY RECORD.

Record upon which have been recorded various frequencies throughout the desired frequency spectrum.

FREQUENCY REGULATOR.

Regulator that maintains the frequency of the frequency generating equipment at a predetermined value or to vary it according to a predetermined plan.

FREQUENCY RELAY.

Relay which functions at a predetermined value of frequency. It may be an overfrequency relay, an under-frequency relay, or a combination of both.

FREQUENCY RESPONSE.

Measure of effectiveness with which a circuit or device transmits the different frequencies applied to it.

FREQUENCY RESPONSE CURVE.

A graphical representation of the manner in which a circuit responds to different frequencies within its operating range.

FREQUENCY RUN.

A series of tests made to determine the frequency response characteristic of a transmission line, circuit, or device.

FREQUENCY SCANNING.

Type of system in which output frequency is made to vary at mechanical rate over a desired frequency band.

FREQUENCY SELECTIVITY.

Characteristic of an electric circuit or apparatus in virtue of which electric currents or voltages of different frequencies are transmitted with different attenuation; specifically, the degree to which a transducer is capable of differentiating between the desired signal and signals or interference at other frequencies.

FREQUENCY SEPARATOR.

Stage or circuit that separates pulses of different frequencies.

FREQUENCY SERIES.

Group of several harmonically related radio frequencies.

FREQUENCY SHIFT.

1. System of telegraph teletypewriter operation in which the mark signal is one frequency and the space signal is 850 cycles lower.
2. A change in the frequency of a radio transmitter or oscillator.
3. A modulation system where one radio frequency represents picture black and a radio frequency 800 cycles away represents picture white. Frequencies between these two limits represent shades of gray. The 800-cycles shift is standard for facsimile use, but other shifts may be used. Also used as the number of cycles difference in frequency shift modulation system.

FREQUENCY SHIFT CONVERTER.

Device which limits the amplitude of a received frequency shift signal and then changes it to an amplitude modulated signal.

FREQUENCY SHIFT KEYING.

That form of frequency modulation in which the

modulating wave shifts the output frequency between predetermined values and the output wave is coherent with no phase discontinuity.

FREQUENCY SHIFT MODULATION.

That form of frequency modulation in which the modulating wave shifts the output frequency between predetermined values and the output wave is coherent with no phase discontinuity.

FREQUENCY SPECTRUM.

Range of wave length from lowest radio frequency to highest light frequency.

FREQUENCY SPECTRUM BANDS.

Frequency Sub-Division
Very Low Frequency (VLF)
Low Frequency (LF)
Medium Frequency (MF)
High Frequency (HF)
Very High Frequency (VHF)
Ultra High Frequency (UHF)
Super High Frequency (SHF)
Extremely High Frequency (EHF)

Frequency Range
Below 30 kc/s
30 to 300 kc/s
300 to 3,000 kc/s
3,000 to 30,000 kc/s
30,000 kc/s to 300 mc/s
300 to 3,000 mc/s
3,000 to 30,000 mc/s
30,000 to 300,000 mc/s

Metric Sub-Division
Myriametric Waves
Kilometric Waves
Hectometric Waves
Dekametric Waves
Metric Waves
Decimetric Waves
Centimetric Waves
Millimetric Waves

FREQUENCY SPLITTING.

One condition of operation of a magnetron which

causes rapid alternating from one mode of operation to another. This results in a similar rapid change in oscillatory frequency and consequent loss in power at the desired frequency.

FREQUENCY STABILITY.

Ability of an oscillator to maintain its operation at a constant frequency.

FREQUENCY STABILIZATION.

Process of controlling the center or carrier frequency so that it differs from that of a reference source by not more than a prescribed amount.

FREQUENCY STANDARD.

Stable low-frequency oscillator used for frequency calibration. It usually generates a fundamental frequency of 50 to 100 kilocycles with a high degree of accuracy, and harmonics of this fundamental are used to provide reference points for checking, 50 or 100 kilocycles apart, throughout the radio spectrum.

FREQUENCY SWING.

1. Peak difference between the maximum and the minimum values of the instantaneous frequency.
2. In frequency modulation, the instantaneous departure of the carrier frequency from the resting frequency, resulting in modulation.

FREQUENCY TOLERANCE.

Maximum permissible deviation, with respect to the reference frequency, of the corresponding characteristic frequency of an emission; the reference frequency may differ from the frequency assigned to a station by a fixed and specified amount. Frequency tolerance is expressed as a percentage, or in cycles per second.

FREQUENCY TRIPLER.

An amplifier, the output circuit of which is resonant to the third harmonic of the input signal. The output frequency is three times that of the input.

FREQUENCY USAGE CHART.

Log kept to show hourly frequency usage. The log shows the frequencies used on a specific circuit and the reasons and duration of any outage.

FREQUENCY VOICE.

Range of frequencies audible to the ear (20-20,000 cycles). Intelephony, the voice range for speech is about 100-3500 cycles.

FREQUENCY-TYPE TELEMETER.

One that employs frequency as the translating means.

FREQUENCY-WAVE-LENGTH RELATION.

For radio waves, the frequency in cycles per second is approximately equal to 300,000,000 divided by the wave length in meters. The wave length in meters is approximately equal to 300,000,000 divided by frequency in cycles per second or to 300 divided by frequency in megacycles.

FRESNEL.

A little-used unit of frequency, equal to 10^{12} cycles per second.

FRESNEL LENS.

Thin lens constructed to have the optical properties of a much thicker lens.

FRESNEL REGION.

Region between the antenna and the Fraunhofer regions.

FRESNEL ZONE.

Cigar-shaped region surrounding the axis of a symmetrical beam antenna. The sum of the distances from any point on the boundary of the first Fresnel Zone to each antenna is one-half wave length longer than the direct path between antennas.

FRESNEL ZONES.

Zones of wave reinforcement and destructive interference caused by interaction of direct waves and those waves reflected from the earth.

FRESNEL'S EQUATION.

An expression for the loss of light at a junction of two transparent media, as at a glass-air junction.

FREYA.

German early warning radar.

FRICTION CLUTCH.

Clutch or coupling operating by friction for engaging or disengaging revolving parts.

FRICTION FEED.

Using the friction between two bodies to force-feed something.

FRICTION TAPE.

Cotton tape impregnated with a sticky, moisture-repellent compound.

FRICTIONAL LOSS.

Loss of energy due to friction between moving parts.

FRIEND.

Designation light to indicate friend on IFF.

FRIENDLY.

Term used in air defense to describe the classification of a track based upon established criteria indicating the airborne object to be of one's own or allied forces. It may also be an identification if such action is taken.

FRINGE HOWL.

A squeal or howl heard when some circuit in a receiver is on the verge of oscillation.

FRON (FRONTIER).**FRONT CONTACT.**

Contact on a movable member which closes a circuit when the associated device is operated.

FRONT PORCH.

1. Difference in time from the start of the blanking signal to the start of the synchronizing signals.

2. In a television signal, the period of time immediately preceding a synchronizing pulse during which the signal is held at black level.

FRONT SURFACE MIRROR.

Optical mirror on which the reflecting surface is applied to the front surface of the mirror instead of to the back.

FRONT-TO-BACK RATIO.

1. Ratio of the resistance of a crystal to current flowing in the normal direction to the resistance

to current flowing in the opposite direction. A term used in connection with checking crystals used as mixers in microwave receivers.

2. Power ratio of a directional antenna between the front and rear ratio.

3. (EW) Ratio of signal strength transmitted in a forward direction to that transmitted in a backward direction. For receiving antennas, refers to the ratio of received signal strength when the signal source is in the front of the antenna to the received signal strength when the antenna is rotated 180 degrees.

FRONT-TO-REAR RATIO.

The ratio of a directional antenna power gain between the front and the rear.

FRONTS.

Boundaries considered to exist between dissimilar air masses.

FRUIT.

Radar beacon system video display of a synchronous beacon return which results when several interrogator stations are located within the same general area. Each interrogator receives its own interrogated reply as well as many synchronous replies resulting from interrogation of the air-borne transponders by other ground stations. (Reference: AFM 100-50.)

FS.

ITU designation for Land Station established solely for the safety of life.

FSA (FEDERAL SECURITY AGENCY).**FSCC (FIRE SUPPORT COORDINATION CENTER).**

Facility, operated by an artillery commander, in which the coordinating representatives of the supporting arms work together to plan and coordinate fire support.

FSCS (FLIGHT SERVICES COMMUNICATIONS SYSTEM).

Network of interphone and teletype communications between Military Flight Service Centers in ConUS used for passing flight movement messages between airbases.

FSE (FIELD SUPPORT EQUIPMENT).

Organizational equipment required, under field or combat conditions, to supplement unit essential equipment or base-support equipment.

FSK (FREQUENCY SHIFT KEYING).

Common type of high speed teletype signal.

FT CUT.

Crystal oscillator-plate of specified dimensions with an edge parallel to X and the angle Z to $Z^1 = 57^\circ$.

FTC (FAST TIME CONSTANT).

Type of coupling circuit used in radar receivers to permit discrimination against echo pulses of duration longer than the transmitted pulse.

FTR (FIGHTER).

FUEL INJECTION.

Forcing of fuel into the combustion chamber of an engine by means of high pressure.

FUEL PUMP.

Small pump for delivering fuel to the engine.

FULCRUM.

Support on which a lever turns.

FULL-DUPLEX OPERATION.

Communication between two points in both directions simultaneously.

FULL LOAD.

The greatest load that a machine or piece of equipment is designed to carry under specified conditions.

FULL PERIOD CIRCUIT.

Circuit comprised of leased or Government-owned lines, which is in continuous use.

FULL-WAVE RECTIFIER.

Rectifier arranged so that current is allowed to pass in the same direction to the load circuit during each half cycle of the alternating current supply.

FULL-WAVE RECTIFIER CIRCUIT.

Circuit which uses both the positive and negative alternations of an alternating current to produce a direct current. It may employ a double-diode tube, or two separate diode rectifier tubes, or copper oxide elements.

FULL-WAVE RECTIFIER TUBE.

Tube containing two sets of rectifying elements for full-wave rectification (double-diode).

FULLY OPERATIONAL STATUS.

That stage in the installation of a C-E facility at which site calibration and operational tests have been completed, essential alternate equipment has been installed, and the facility has been integrated into an appropriate system or net.

FUME RESISTANT.

So constructed that it will not be injured readily by the specified fumes.

FUNCTION.

An operation performed by a teletypewriter such as carriage return, line feed, figures (shift), letters (shift), motor stop, bell, etc., that normally is not associated with a printed character.

FUNCTION KEY.

Specific keys on a teletypewriter.

FUNCTIONAL NET.

Net used to accomplish, by the most rapid possible means, a specified operational function. The net title indicates the function for which the net is provided (radar telling net, tactical alert net, etc.)

FUNDAMENTAL.

1. Simple harmonic component of a composite vibration or musical tone which has the lowest frequency.
2. Sometimes used in connection with three phase equilibrium.

FUNDAMENTAL FREQUENCY.

Lowest frequency component of a periodically recurring wave.

FUNDAMENTAL HARMONIC.

Harmonic component having the lowest frequency.

FUNDAMENTAL MODE.

1. Mode with the lowest critical frequency.
2. In waveguide transmission, the mode with the lowest cutoff frequency. Designations for this mode are $TE_{1,0}$, and $TE_{1,1}$ for rectangular and circular waveguides, respectively.

FUNDAMENTAL TONE.

Partial tone which has the lowest frequency.

FUNDAMENTAL UNITS.

Those units which are selected to serve as the basis of an absolute system of units. They are of necessity, arbitrarily chosen.

FUNDAMENTAL WAVE LENGTH.

That wave length corresponding to the fundamental frequency. In an antenna, the fundamental wave length corresponds to the lowest resonant frequency of the antenna alone, without added inductance or capacitance.

FUP (FACILITIES UTILIZATION PLAN).

Operating plan, base level, for utilization of base C-E facilities.

FUSE.

Protective device, used in an electric circuit, containing a wire, bar, or strip of fusible metal. When the current increases beyond the rated strength of the fuse, the metal melts and thus the circuit is broken.

GRASSHOPPER. Small fuse incorporating a spring which, upon release by the fusing wire, shows a visible signal and makes an auxiliary circuit to operate an alarm.

FUSE ALARM.

Circuit which produces a visual and/or audible signal to indicate a blown fuse.

FUSE BLOCK.

Insulating base on which are mounted fuse clips or other contacts for holding fuses.

FUSE CLIPS.

Contacts on the fuse support for connecting the fuse holder into the circuit.

FUSE CUTOUT.

Assembly of a fuse support and a fuse holder

which may or may not include the fuse link.

FUSE DISCONNECTING SWITCH.

Disconnecting switch in which a fuse unit forms a part of the blade.

FUSE FILLER.

Material which is placed within the fuse tube to assist in the circuit interruption.

FUSE HOLDER.

Supporting device which is mounted in an electric circuit for the purpose of carrying a fuse and providing connections for its terminals.

FUSE LINK.

That part of a fuse which carries the current of the circuit, and all or part of which melts when the current exceeds a predetermined value.

FUSE TUBE.

Tube of insulating material which incloses a fuse link.

FUSE UNIT.

Assembly comprised of a fuse link mounted in a fuse holder with parts and materials in the fuse holder essential to the operation of the fuse link.

FUSE WIRE.

Wire made from an alloy that melts at a relatively low temperature.

FUSED QUARTZ.

Glasslike insulating material having exceptionally good insulating heat-resisting, and acid-resisting properties.

FUSESTAT.

Time-delay-type fuse, similar to a fusetron, but having a base connected, requiring a socket adapter which prevents the insertion of a fuse or fusetron of an incorrect rating.

FUSETRON.

Fuse equipped with an overload feature permitting overloads up to 50 percent for a short period of time. It has a screw-plug base.

FUSIBLE WIRE.

Wire made of low melting point alloy used in fire alarm circuits.

FUSION.

1. Mental blending of the right and left eye images into a single, clear image by stereoscopic action.
2. Conversion of a solid into a liquid state (the reverse of freezing).
3. Melting or melting together.
4. Combining of atoms to produce energy.

FUSTAT.

Same as a fusetron except for the base connection. It must be used with an adapter for insertion into a screw-type socket.

FW (FIELD WIRE).

Flexible insulated wire used in field telephone and field telegraph systems.

FWT (FAIR WEAR AND TEAR).

FX.

ITU designation for Fixed Station.

FXE.

ITU designation for Telemetering Land Station.

FXH.

ITU designation for Hydrological and Meteorological Fixed Station.

G

G.

Letter symbol for conductance.

g (GRAM).

Metric unit of mass equal to one cubic centimeter of pure water at 4°C.

G (GRAVITY).

Gravitational acceleration of terrestrial bodies toward the center of the earth.

G (GROUND).

Conducting connection between an electric circuit or equipment and the earth or some conducting body serving in place of the earth.

G/A (GROUND TO AIR).

Pertains to communication with airborne objects from the ground.

G/G (GROUND-TO-GROUND).

Pertains to communication between two points on the ground.

G-BAND.

Frequency band used in Mark III IFF. Transponders that operate in this band are fixed-tuned so that immediate responses are obtained which can be displaced on a PPI scope.

G-INDICATOR.

Type of radar indicator in which a single signal appears as a wing spot, the position of which gives azimuth errors on the horizontal component and elevation error on the vertical component. The length of the wings is inversely proportional to range.

G-SCAN.

Single signal only, appearing as a bright spot on which wings grow as the distance to the target is diminished. Azimuth angle appears as the horizontal coordinate, elevation angle as the vertical coordinate. This has been referred to as Mark VI indication.

G-SCOPE.

Type of radar indicator in which a single signal appears as a wing spot, the position of which gives azimuth errors on the horizontal component and elevation error on the vertical component. The length of the wings is inversely proportional

to range.

GA (GAGE).

1. Instrument for measuring the state of a phenomenon.
2. Device for determining whether a specified dimension is within specified limits.

GAF (GERMAN AIR FORCE).

GAFF.

Spur on the inside of pole climbers which is forced into the pole by the weight of the lineman.

GAIN.

Ratio of output to input voltage, current, or power, usually expressed in decibels. Gain and transmission gain are general terms used to denote an increase in signal power in transmission from one point to another. Gain is usually expressed in decibels and is widely used to denote transducer gain.

ANTENNA. 1. Ratio of the maximum radiation intensity of the antenna in question to the maximum radiation intensity from a reference antenna with the same power input.

2. Gain of an antenna, in reference to an isotropic radiator, can be measured by measuring the intensity of the radiated field on the principal axis and at a known distance from the antenna. Knowing the power delivered to the antenna, the field intensity that would have existed with an isotropic radiator is easily calculated.

3. Effectiveness of a directional antenna in a particular direction as compared with a standard dipole antenna. It is usually expressed as the ratio of the standard antenna power to the directional antenna power that will produce the same field strength in the desired direction.

ANTENNA FIELD. An FCC television standards figure of merit for the effectiveness of a transmitting antenna. It is a measure of the effective, free-space, field intensity, measured in the horizontal plane, produced by a transmitting antenna at a distance of one mile with an antenna input power of one kilowatt.

AVAILABLE-POWER. Of an electric transducer, the ratio of the available power from the output terminals of the transducer, under specified input termination conditions, to the available power from the driving generator. The maximum available power gain is obtained when the input termination admittance is the conjugate of the driving point admittance at the input terminals of the transducer.

CONVERSION. Ratio of the IF output voltage to the input voltage of the first detector of a superheterodyne receiver.

DIVERSITY. Gain in reception as a result of the use of receiving antennas. Signals induced in antennas separated by five wavelengths or more fade independently, and better reception is obtainable in the presence of fading by the use of more than one antenna.

INSERTION. Insertion gain resulting from the insertion of a transducer in a transmission system is the ratio of the power delivered to that part of the system following the transducer to the power delivered to that same part before insertion. This ratio is usually expressed in decibels.

NET. Sum of the effective gains in a multi-repeated telephone circuit.

POWER. Amplifying device ratio of the power delivered to a specified load impedance to the power absorbed by its input. This ratio is usually expressed in decibels.

RELATIVE POWER. Transmitting-or receiving-antenna measured ratio of the signal power one produces at the receiver input terminals to that produced by the other, the transmitting power level remaining fixed.

TRANSDUCER. Ratio of the power that the transducer delivers to a specified load under specified operating conditions to the available power of a specified source; usually expressed in decibels. If more than one component is involved in the input or output, the particular components used must be specified.

GAIN CONTROL.

1. Control connected so that it can change the

overall gain of an amplifier.

2. Any volume control.

GAIN MARGIN.

Excess of loss over gain around a possible singing path at any frequency, or the minimum value of such excess over a range of frequencies.

GAL (GALLON).

Unit of measure for liquids.

GALACTIC CLUSTER.

Aggregation of stars in a galaxy.

GALAXY.

Spiral system of stars and planets; our galaxy, a disc-shaped aggregation of stars called the Milky Way, includes our solar system, far out on one of its spiral arms.

GALENA.

Crystalline form of lead sulphide. A bluish-gray mineral, often used as the crystal in a crystal detector.

GALVANIC.

Term used at one time for electricity flowing as a current resulting from chemical action, to distinguish it from electrostatic phenomena.

GALVANIC CELL.

Electrolytic cell that is capable of producing electric energy by electrochemical action.

GALVANIC CURRENT.

Steady, unidirectional current, such as ordinary direct current. Used in electrobiology.

GALVANIZING.

Process of coating steel with a layer of zinc to retard corrosion.

GALVANOMETER.

Instrument designed to measure the force and direction of electrical currents of feeble intensity. Indications are given by the deflection, right or left, of a magnetic needle, or by the movement of a magnetic coil.

GALVANOMETER CONSTANT.

Number by which a certain function of the reading of a galvanometer must be multiplied to obtain the current value in ordinary units.

GALVANOMETER SHUNT.

Resistor connected in parallel with a galvanometer to increase its range under certain conditions. It allows only a known fraction of the current to pass through the galvanometer.

GAMMA.

1. Unit of magnetic intensity.
2. Definite numerical indication of the degree of contrasts in a photograph, facsimile reproduction, or received television picture.

GAMMA RAYS.

Component of the emission from radioactive substances, thought to be electromagnetic radiation of very short wavelength and of nuclear origin. A distinction is recognized between true gamma rays and the X-rays produced by the readjustments of extra-nuclear electrons disturbed by alpha, beta, and gamma rays from the nucleus.

GANG.

Couple mechanically two or more variable components (capacitors, switches, and potentiometers) to facilitate operating from a single control knob.

GANG CAPACITOR.

Two or more variable tuning capacitors mounted on the same shaft and connected into successive amplifier stages so that all stages can be tuned simultaneously by a single control.

GANG CONTROL.

Control of a number of similar pieces of apparatus simultaneously with one adjusting knob or device.

GANG SAW.

Crystal saw, usually of the muck type, with two or more parallel blades.

GANG SWITCH.

Number of switches mechanically coupled for simultaneous operation, but connected to different circuits. In one common form, two or more rotary switches are mounted on the same shaft for operation by a single control.

GANG TUNING CAPACITOR.

Two or more variable tuning capacitors mounted

on the same shaft and connected into successive amplifier stages so that all stages can be tuned simultaneously by a single control.

GANGED TUNING.

Simultaneous tuning of two or more circuits by a single mechanical control.

GAP.

1. Space between radiation lobes of a radar antenna where the field strength is low, resulting in incomplete radar coverage.
2. Space where radiation fails to meet minimum coverage requirements: this might be a space not covered or a space where the minimum specified overlap was not obtained.
3. That portion of a magnetic circuit which does not contain ferromagnetic material, such as an air gap.

GAP ARRESTOR.

Type of lightning arrestor in which there are a number of air gaps in series between cylinders or cones of a metal, such as zinc, which is not liable to arcing.

GAP CODING.

1. Means for inserting gaps or periods of non-transmission in a system that normally transmits continuously. The spacing and duration of the periods of silence from the code vary.
2. Subdividing the response of a transponder into long and short groups of pulses (like Morse) for recognition purposes.

GAP FILLER.

1. Light-weight radar set used to fill gaps in the coverage pattern of an early warning radar net.
2. Auxiliary radar antenna used to cover gaps in the main radar antenna pattern.

GAP FILLING.

Electrical or mechanical rearrangement of an antenna array, or the use of a supplementary array, to produce lobes where gaps previously occurred.

GAP MOTOR.

Spark-gap drive motor.

GAP-FILLER DATA.

Data transmitted from gap-filler-radar sites to a direction center.

GAP-FILLER RADAR.

Short-range radar installations used in areas which are not adequately covered by long-range radar.

GAR (GARRISON).

1. Permanent installation or post at which troops are stationed.
2. The body of troops at such a post.

GARBLE.

Defect in transmission, reception, or encryption which renders the message or a portion thereof incorrect or undecryptable.

GARBLE TABLE.

Any table, chart or other aid which may be used to correct a garble.

GARBLING.

Classified definition. (Reference: AFM 100-50.)

GARTER SPRING.

Spring which is fastened around the circumference of the drum of the facsimile machine to hold the record sheet or subject copy on the drum.

GAS.

Matter in which the cohesion is so negligibly small that it will diffuse throughout any inclosure in which it is placed; specifically, when the substance is at a temperature above its critical temperature.

GAS AMPLIFICATION FACTOR.

Ratio of the charge arriving on the anode of a counter tube to the charge produced in the primary ionizing event.

GAS CELL.

Cell in which the action depends on the absorption of gases by the electrodes.

GAS CURRENT.

Current flowing to an electrode and composed of positive ions which have been produced as a

result of gas ionization by an electron current flowing between other electrodes.

GAS FOCUSING.

Focusing of the electron beam in a cathode-ray tube by varying the filament voltage and temperature, thereby changing the radial electrostatic focusing field that is automatically produced by accumulations of positive ions in the tube.

GAS MAGNIFICATION.

Increase in current through a phototube, due to ionization of the gas in the tube.

GAS PHOTOTUBE.

One into which a quantity of gas has been introduced after evacuation, usually for the purpose of increasing the tube's sensitivity.

GAS TUBE.

Evacuated electron tube with a small amount of gas sealed inside. Ionization of the gas molecules during operation is responsible for the current flow.

GAS-ELECTRIC DRIVE.

Self-contained system of power conversion in which a gas engine supplies power to the driving motors through an electric generator which it operates.

GAS-FILLED LAMP.

Tungsten-filament lamp containing nitrogen or an inert gas such as argon.

GAS-FILLED-TUBE RECTIFIER.

Rectifier in which rectification is accompanied by the ionization of an inert gas caused by a unidirectional flow of electrons from a heated electrode within an inclosed space.

GAS-TUBE RELAXATION OSCILLATOR.

Oscillator using a gas tube to provide abrupt changes in current.

GAS X-RAY TUBE.

X-ray tube in which the emission of electrons from the cathode is produced by positive bombardment.

GASEOUS TUBE.

Electronic tube into which a small amount of gas or vapor is admitted after the tube has been

evacuated. Ionization of the gas molecules during operation of the tube gives greatly increased current flow.

GASKET.

Packing placed between two surfaces which must have a leakproof joint.

GASSINESS.

The presence of unwanted gas in a vacuum tube, usually in relatively small amounts, caused by leakage from outside or evolution from the inside walls or elements of the tube.

GASSING.

1. Evolution of gas from one or more of the electrodes during electrolysis.
2. Liberal production of gas in a storage battery when the charging current is continued after the battery is completely charged.

GASTON.

An/ARA-3 modulator assembly. This modulator produces a random noise modulation signal and uses a gas tube as the noise source. It operates on a 24- to 29-volt dc power source, and may be attached to any standard aircraft communications transmitter to provide countermeasurer jamming modulation.

GATE.

1. Square-wave voltage which switches a circuit on or off electronically by energizing the grid or cathode of the control tube.
2. Control transfer point in the radar controlled airspace specifically located on the final approach to the runway to which aircraft are vectored in order to intercept the final approach. May or may not be marked by a radio aid or fixed-in range.
3. Circuit having an output and a multiplicity of inputs so designed that the output is energized only when certain input conditions are met.

GATE TUBE.

Thermionic tube which is operative only while two signal voltages, derived from two independent circuits, are applied simultaneously to two separate electrodes.

GATE-PRODUCING MULTIVIBRATOR.

Rectangular-wave generator designed to produce a single positive or negative gate voltage when triggered, and then to become inactive until the next trigger pulse.

GATED SWEEP.

Sweep in which the duration as well as the starting time is controlled in order to exclude undesired echoes from the indicator screen.

GATED-BEAM DETECTOR.

Single-stage, FM detector using a gated-beam tube.

GATING.

1. Process of selecting those portions of a wave which exist during one or more selected time intervals or which have magnitudes between selected limits.
2. Applying a rectangular voltage to the grid or cathode of a cathode-ray tube to sensitize it during the sweep time only.

GAGE.

1. Instrument for measuring the state of a phenomenon as speed of wind, pressure of oil or steam, or rate of current flow.
2. Device for determining whether a specified dimension is within specified limits.

GRAM. Gage used in adjusting spring tension of contacts of relays and keys.

THICKNESS. Guard used for measuring the distance between open contact points of relays and keys.

WIRE. Device used to classify wire diameters according to a standard scale of numbers.

GAUSS.

The cgs electromagnetic unit of magnetic induction. One gauss represents one line of flux per square centimeter.

GAUSSMETER.

Instrument that provides direct reading of magnetic field density (flux density) by virtue of the interaction between an internal magnetic field being measured.

GAUSS THEOREM.

Summation over any closed surface of the normal component of the electric displacement is equal to the electric charge within the surface.

GB (RADIO CONTROLLED GLIDE BOMB).

GBC (GREENLAND BASE COMMAND).

GC.

Designation for conversion transconductance.

GCA (GROUND CONTROLLED APPROACH).

Radar system, normally portable or mobile, which provides both surveillance and precision approach information by which aircraft approaches may be directed from the ground via radio communications. Two separate functions are performed by GCA. The first is the vectoring and sequencing of all traffic within a terminal area. The second is the control of aircraft on final approach to a runway. This control is accomplished by means of ground-derived information, including distance from touchdown, deviation from a predetermined glide, slope, and deviation from a predetermined course line.

GCA (GROUND CONTROLLED APPROACH) MINIMUMS.

That altitude on a GCA run at which the pilot will be advised that he is passing below regulatory GCA minimums for the airbase in question. GCA minimums do not refer to the minimum operating capabilities of the electronic system, but are a safety factor to guard against the combined human error of both controller and pilot.

GCI (GROUND CONTROLLED INTERCEPTION).

In air defense, an interception in which the interceptor weapon is vectored to the target by instructions transmitted from the ground.

GCL (GROUND CONTROL OF LANDING).

GCT (GREENWICH CIVIL TIME).

(Reference: GREENWICH MEAN TIME.)

GDA (GUN-DEFENDED AREA).

Restricted area defended by anti-aircraft weapons. Friendly airborne objects may fly over such an

area only in accordance with established procedures.

GEAR HASH.

Repetitive pattern caused in the recorded copy due to imperfections in the gearing system which cause rapid repetitive speed variations of the recording mechanisms.

GEE (GROUND ELECTRONICS ENGINEERING) SYSTEM.

British medium-distance, hyperbolic, radionavigation system which employs two or more ground stations, each transmitting synchronized pulses. The receiver in the aircraft measures the difference in the arrival time of the pulses from the ground stations. Charts of hyperbolic lines of position are made for various time differentials. The principle of operation is similar to that of LORAN. The GEE system has been used primarily in Europe. It operates in the 20-85 mc frequency band with a bandwidth requirement of 0.7 mcs. In this band, four groups of frequencies are used, each group containing six frequencies. A GEE chain consists of a master station and two or three slave stations located at the distances of 50-100 miles from the master station. In operation, the master station radiates pulses of RF energy at a precisely controlled recurrence rate. These pulses, arriving at the slave stations, cause them to radiate similar pulses either alternately or at fixed master station pulse intervals, with predetermined delays incorporated in each slave transmission. The time difference in arrival at the receiver between a master and a slave pulse determines a hyperbolic line of position. A fix is determined by the intersection of two or more of these lines. Normal receiver instrumentation involves displaying the received signals on a CRT. The operator measures the delay time by means of an accurate local time reference. GEE is effectively a line-of-sight system with a range, at 30,000 feet, of about 400 miles. Average accuracy is in the order of two to three miles.

GEE H.

This is a term applied to a combination of the GEE and H systems of navigation.

**GEEIA (GROUND ELECTRONICS
ENGINEERING-INSTALLATION AGENCY).**

Organization under Rome Air Materiel Area responsible for engineering and installation of USAF ground electronics equipment. See AFR 20-17.

GEIGER COUNTER TUBE.

A type of counting tube, consisting of a highly charged needle inside a metallic cylinder. Devised by Geiger for detecting and counting ionizing particles in the air.

GEIGER PLATEAU.

Approximately horizontal portion of the counting rate versus voltage curve.

GEIGER REGION.

Voltage interval in which the pulse size is independent of the number of primary ions produced in the initial ionizing event.

GEIGER THRESHOLD.

Lowest voltage at which all pulses, produced in the tube by any ionizing event, are of substantially the same size, regardless of the size of the primary ionizing event. This threshold is the start of the Geiger region where the counting rate does not substantially change with applied voltage.

GEIGER-MULLER COUNTER.

A metallic, cylindrical sheath with a slender wire running axially through it; used to detect the presence of hard radiation and nuclear particles.

GEIGER-MULLER COUNTER TUBE.

A metallic, cylindrical sheath with a slender wire running axially through it, and used to detect the presence of hard radiation and nuclear particles.

GEL.

Jellylike substance formed by partial drying or by cooling certain colloidal solutions, such as those of soap or gelatin, in hot water.

GEN (GENERAL, GENERATOR).**GENEMOTOR.**

Commercial dynamotor.

GENERAL CONTRACT.

General contract is one entered into with a communication company by the Air Materiel Command or the General Services Administration governing the general terms and conditions under which communications services will be procured from the company.

GENERAL CONTROL UNIT.

Remote control unit, associated with operator's console, which permits full control of all necessary operating functions.

GENERAL COORDINATED METHODS.

Those methods, reasonably available for general application to electric supply or communication systems, which contribute to inductive coordination without specific consideration to the requirements for individual inductive exposures.

GENERAL CRYPTOSYSTEM.

A basic method employing certain invariable elements in encrypt and decrypt.

GENERAL MESSAGE.

Messages which have a wide standard distribution. They are assigned an identifying title and usually a sequential serial number.

GENERAL ORDERS.

1. Permanent instructions, issued in order form, that apply to all members of a command, in contrast with special orders, which affect only individuals or small groups. General orders are usually concerned with matters of policy or administration.

2. Series of permanent guard orders that govern the duties of a sentry on post.

GENERAL PURPOSE SYSTEM.

Specific cryptosystems intended for any type of message.

GENERAL SERVICES ADMINISTRATION.

Agency of the executive branch of the Government, reporting to the President of the United States, which is responsible for providing an economical and efficient system for the procurement, supply, utilization, disposal, and records management of personal property and non-personal services.

GENERALIZED SINUSOIDAL QUANTITY.

Combination of two or more oscillating quantities which results in the production of new frequency components not present in the original oscillating quantities. Example: In communication, one of the oscillating quantities of a modulated quantity is called a carrier, and the other, a signal.

GENERATING STATION.

Plant wherein electric energy is produced from some other form of energy (chemical, mechanical, or hydraulic).

GENERATOR.

1. Rotating machine which converts mechanical energy into electrical energy.
2. Radio device which develops an ac voltage at a desired frequency and of a desired shape when energized with dc power.
3. Any device which generates electricity.

ac (ALTERNATING CURRENT). 1. Rotating electrical machine, generally known as an alternator, that converts mechanical power into alternating current.

2. Vacuum-tube oscillator, or any other device, designed for the purpose of producing alternating current.

ALL-WAVE SIGNAL. Test instrument capable of generating an unmodulated or tone-modulated, radio-frequency signal at any frequency needed for aligning or servicing radio receivers and amplifiers

DIVERter POLE. Compound wound dc generator with the series winding of the diverter pole opposing the flux generated by the shunt wound main pole; provides a close voltage regulation.

HAND. Small, ringing generator operated by a hand crank and consisting of an armature revolved between a set of permanent magnets. Used with all magneto subscriber's sets and also as an emergency source of ringing current at the manual switchboard.

SUB-CYCLE. Frequency-reducing device, which furnishes ringing power at a submultiple of the power-supply frequency.

SWEEP. Circuit which applies voltage or currents to the deflection elements in a cathode-ray tube in such a manner as to make the deflection of the electron beam a known function of time, against which other periodically occurring electrical phenomena may be examined, compared, or measured.

GENERATOR PAIR.

Paired conductors used for supplying ringing current.

GENERATOR VOLTAGE REGULATOR.

Regulator which functions to maintain the voltage of a synchronous generator, condenser, motor or direct-current generator, at a predetermined value, or vary it according to a predetermined plan.

GENR (GENERATOR).

(Reference: GENERATOR.)

GEOD (GEODETIC).

Shortest line of the surface of the earth between two points.

GEODREF (WORLD GEOGRAPHIC REFERENCE SYSTEM).

Geographic reference system for the world, used in the Air Force for aircraft position reports and target designation, and for the control and direction of air units engaged in air defense, air-sea rescue, and tactical air operations.

GEOGRAPHIC ADDRESS GROUP.

Address group representing a geographic location or area which must be used in combination with a conjunctive address group.

GEOID.

Earth considered as a geometric solid, the surface of which coincides with the mean level of the ocean.

GEOMETRIC DISTORTION.

In television, any aberration which causes the reproduced picture to be geometrically dissimilar to the perspective-plane projection of the original scene.

GEOMETRIC MEAN.

Square root of the product of two quantities.

GEOPOLITICS.

Science dealing with the effect of physical environment on political actions.

GER (GERMANY).**GERMAN SILVER.**

Silver-white alloy consisting essentially of copper, zinc, and nickel. Now usually called nickel silver.

GERMANIUM DIODE.

Rectifier or detector using metallic germanium crystal.

GETTER.

Alkali metal introduced into a vacuum tube during manufacture and fired after the tube has been evacuated to react chemically with any gases which may have been left in manufacture. The silvery deposits on the inside of the glass envelope of a tube, usually near the tube base, is the result of getter firing.

GFD (GAP-FILLER DATA).

Data transmitted from gap-filler-radar sites to a direction center.

GFR (GAP-FILLER RADAR).

Short-range radar installations used in areas which are not adequately covered by long-range radar.

GHOST.

1. Radar echo caused by abnormal atmospheric conditions.
2. In television, a spurious image resulting from an echo.

GHOST IMAGE.

Undesired duplicate image offset somewhat from the desired image as viewed on a television screen. It is due to a reflected signal traveling over a longer path, hence, arriving later than the desired signal. It may be eliminated by the use of directional antenna array which receives signals over only one path.

GHOST SIGNAL.

Unwanted signal appearing on the screen of the radar indicator, caused, for example, by echoes which experience multiple reflections before reaching the receiver.

GHOSTS.

Term used in passive detection. Ghosts occur when two or more passive-detection stations take direction-finding bearings on separate aircraft transmitting on the same frequency under the impression that they are plotting the same aircraft.

GHQ (GENERAL HEADQUARTERS).**GI (GALVANIZED IRON WIRE).**

Equipment used to direct gunfire.

GIBSON GIRL.

Portable, hand-operated transmitter which is used by pilots forced down at sea to send out information as to location.

GILBERT.

Unit of magnetomotive force in the centimeter-gram-second electromagnetic system. The value of the magnetomotive force in gilberts in any magnetic circuit is equal to the line integral around the circuit of the magnetic intensity in oersteds, with length being in centimeters. One gilbert is equivalent to 0.7956 ampere-turn.

GILBERTS PER CENTIMETER.

The practical centimeter-gram-second unit of magnetic intensity. It corresponds to volts per centimeter for electric potential gradient. Gilberts per centimeter are the same as oersteds.

GILL SELECTOR.

Slow-acting, telegraph sender and calling key for selective signaling.

GIN POLE.

Pole which is used, in conjunction with ropes and pulleys, for lifting and moving heavy loads and for erecting poles or towers.

GL (GUN LAYING).

Action of laying a gun.

GLASS-PLATE CAPACITOR.

High-voltage capacitor in which the metal plates are separated by sheets of glass servicing as the dielectric, with the complete assembly generally immersed in oil.

GLASS-TYPE TUBE.

Vacuum tube having a glass envelope or bulb.

GLIDE PATH.

1. Inclined surface of radio signal extending upward at an angle to the horizontal from the point of desired landing.
2. Imaginary line traced by an aircraft from the point at which the final landing leg is started to the point of contact with a runway.

GLIDE-PATH INTERCEPT.

That point on the runway surface intercepted by the glide path. Not necessarily the same as touchdown.

GLIDE-PATH LOCALIZER.

That part of an instrument landing system for aircraft that provides an indication of altitude to the pilot coming into a landing without benefit of visual contact with the ground. The official CAA instrument landing utilizes an equisignal glide path produced by a transmitter operating at about 300 megacycles and producing a radiation pattern that acts with the runway localizer pattern, to create in space a recognizable glide path for a blind landing.

GLIDE-PATH/SLOPE STATION.

Radionavigation station in the aeronautical radionavigation service which provides vertical guidance in connection with an instrument landing system.

GLIDE-PATH TRANSMITTER.

Radio transmitter which provides signals for vertical guidance of aircraft along an inclined surface, extending upward at an angle to the horizontal from the point of desired ground contact.

GLIDING PLANE.

Plane within a crystal, along which occurs a displacement of the crystal structure. Slipping of one lattice layer past the adjacent layer, when the crystal is subjected to shear.

GLINT.

Pulse-to-pulse variation in amplitude of reflected radar signal, owing to the reflection of the radar beam from a body which is changing its reflecting surface in an extremely rapid manner, such as would exist in pulses reflected from a rapidly spinning airplane propeller.

GLO (GROUND LIAISON OFFICER).

GLOBECOM (GLOBAL COMMUNICATIONS).

Abbreviation for the United States Air Force Strategic Communications System while in the programming states. (Reference: AIR FORCE STRATEGIC COMMUNICATIONS COMPLEX.)

GLOW DISCHARGE.

Luminous discharge of electricity through a gas, without sparks. In a phototube, a glow discharge indicates excessive ionization and excessive current.

GLOW LAMP.

1. One in which light is produced by a glow discharge between two electrodes in an evacuated envelope into which a small quantity of gas or vapor has been introduced. It does not provide rectification. Neon gives a reddish-orange glow, mercury vapor gives a blue glow, and argon gives a purple glow.
2. Gas-discharge tube serving as a concentrated source of light whose brightness varies in proportion to current flow. When an AF signal is combined with the lamp current, the brightness of the glow discharge varies in accordance with the AF signal variations.
3. Glow-discharge type of tube whose light brightness is proportional to the current passing through the tube; used for photographic recording of facsimile signals. The glow discharge takes place in a cup or crater rather than on a plate as in a neon lamp.

GLOW POTENTIAL.

Voltage at which a glow discharge begins in a gas-filled, electronic tube as the voltage is gradually increased.

GLOW SWITCH.

Small gas-discharge tube consisting of a pair of

contacts, one actuated by a bimetallic strip, in a glass bulb containing a rare gas such as neon or argon. The tube and an inductance are connected in series with a fluorescent lamp for starting purposes. In starting, a glow discharge heats the thermostatic strip and bends it to close the switch contacts. The closed contacts apply filament current to the fluorescent lamp. The thermostatic strip cools quickly, its contacts open, and the resulting inductive surge strikes the arc in the lamp. If the arc does not strike the first time, the contacts quickly open and close again automatically until it does start.

GLOW TUBE.

Cold cathode, gas-discharge tube having no means for controlling the one-way flow of current.

GLOW-DISCHARGE MICROPHONE.

Microphone in which the action of sound waves on the current, forming a glow discharge between two electrodes, causes corresponding variations in the current.

GLOW-DISCHARGE TUBE.

Vacuum tube in which conduction is chiefly accomplished by ions moving in a glow discharge between electrodes.

GLOW-DISCHARGE VOLTAGE REGULATOR.

Gas tube that varies in resistance, depending on the value of the applied voltage. It is used for voltage regulation.

GM (GUIDED MISSILE).

Missile that is directed to its target while in flight or motion, either by a preset or self-reacting device within the missile or by radio command outside the missile.

GMT (GREENWICH MEAN TIME).

Mean solar time at the meridian of Greenwich (zero longitude).

GND (GROUND).

1. Earth's surface, often restricted to the land surface.
2. Soil and rocks that constitute the land and underlie the sea and other water areas.
3. Earth, or substance servicing for it, used to

complete an electrical circuit. Metallic connection used to ground a circuit.

GO (GENERAL ORDERS).**GOBO.**

1. Black or dark sheet of wall board or similar material used to shield the lens of a television camera from nearby lights.
2. Sheet of sound-absorbing material used to shield a microphone from sounds arriving in a certain direction.

GOC (GROUND OBSERVER CORPS).

Volunteer civilian organization which reports movement of certain airborne objects to designate USAF agencies as an aid in the detection of such objects in the air defense system.

GOLD.

Precious metal used in some delicate electric instruments, as in the gold-leaf electroscope. Also used for electroplating radio parts that must withstand severe corrosive conditions such as exist in the tropics.

GOLD-LEAF ELECTROSCOPE.

Apparatus in which two pieces of gold leaf are joined at their upper ends and suspended inside an insulating support such as a glass jar. The leaves spread out owing to repulsion of like charges when a charge is applied to the terminal connected to the leaves.

GOLDSCHMIDT ALTERNATOR.

Rotating machine employing oscillating circuits in connection with both the field and the armature to introduce harmonics of the fundamental generated frequency. Interaction between stator and rotor harmonics gives a cumulative effect, providing very high radio frequencies. Used as a transmitter in the early days of radio.

GONIOMETER.

1. As applied to a radio-range system, a device for electrically shifting the directional characteristics of an antenna.
2. Antenna system on an RDF set.
3. Electrical device used to determine the azimuth of a received signal by combining the outputs of individual elements of an antenna array in particular phase relationships.

GOOD.

Expression used in SAGE operations, and is a tracking merit evaluation associated by the computer with a track which the automatic-tracking program is tracking with no difficulty.

GOOD GROUND.

Earth with a conductivity of 10-2 and a dielectric constant of 15 in MKS units.

GORGON 5.

Air-to-surface missile developed for the Navy. The nomenclature is XASM-N-5.

GOVERNED SERIES MOTOR.

Motor used with teletypewriter equipment with a governor for regulating speed.

GOVERNOR.

Automatic attachment to a motor for controlling the speed of rotation.

GP (GROUP).

1. Flexible administrative and tactical unit, in Army, Air Force, and Marine Corps usage, composed of either two or more battalions or two or more squadrons. The term also applies to combat support and service support units.
2. Number of ships and/or aircraft, in Naval usage, normally a subdivision of a force, assigned for a specific purpose.
3. Consolidation of a number of interceptor tracks, in air defense usage, into a single, summarized display.

GPI (GROUND POSITION INDICATOR).

Computer, similar to an air position indicator, with provision for taking account of drift.

GPO (GOVERNMENT PRINTING OFFICE).

GRADIENT.

Rate at which a variable quantity increases or decreases. Thus, potential gradient is the difference of potential per unit length along a conductor or through a dielectric.

GRADIENT MICROPHONE.

Microphone, the output of which corresponds to a gradient of the sound pressure.

GRAMME RING.

Armature, constructed of iron in the form of a ring, around which the coils are wound. Each turn is tapped at the small diameter of the ring and connected to a commutator segment. Introduced by Z. T. Gramme in 1870 for motors and generators.

GRANULAR CARBON.

Small particles of carbon. Used in carbon microphones.

GRAPH.

Pictorial presentation of the relation between two or more variable quantities, such as between an applied voltage and the current it produces in a circuit.

GRAPHECHON.

Electron tube which utilizes camera tube principles for storing and recovering electrical signals. In this type of tube, information can be stored at one scanning rate and can be recovered at a different scanning rate. Useful in radar applications.

GRAPHIC INSTRUMENT.

Instrument that makes a continuous record of its indications on a traveling paper chart by means of a pen or other marking device attached to its moving system.

GRAPHICAL ANALYSIS.

Use of diagrams and graphical methods to obtain operating data and answers to scientific and mathematical problems.

GRAPHICS.

Pictorial system to transmit and receive an exact duplicate of message or intelligence material as prepared by the originator. Completed system to be capable of handling pictorial intelligence with a definition sufficient to permit actual resolution of 250 lines per inch and 15 gray shade levels.

GRAPHITE.

Finely divided form of carbon, used as a lubricant, and sometimes in the construction of carbon resistance elements.

GRASS.

Random interference caused primarily by circuit noise. The interference appears as sharp, closely spaced discontinuities in the base line of radar indicators. If the equipment is operating properly, the height of the grass is substantially level across the screen, and not sufficiently great to cause bad interference to echoes from targets within range.

GRASSHOPPER FUSE.

Small fuse incorporating a spring which, upon release by the fusing wire, shows a visible signal and connects an auxiliary circuit to operate an alarm.

GRATING.

Device for spreading out light or other radiation by interference between waves emerging from fine parallel slits in a plate or from narrow parallel reflecting surfaces made by ruling grooves on polished metal.

DIFFRACTION. Screen having 1000 to 50,000 lines per inch on a polished metal or glass surface. It is used to produce a spectrum by interference between different colors of light passing through or reflected by the grating.

GRATING REFLECTOR.

Open-work, metal structure designed to provide a reflecting surface for an antenna.

GRATZ RECTIFIER.

Arrangement of four electrolytic rectifiers per phase, connected into bridge circuits for full wave rectification.

GRAVISPHERE.

Space area around the earth in which the earth's gravity is a significant force.

GRAVITATION.

Force which exists between all particles of matter everywhere in the universe.

GRAVITY CELL.

Primary cell in which two electrolytes are kept separate by their difference in specific gravity. It is a modification of the Daniell cell, and is now obsolete.

GRAVITY, SPECIFIC.

Ratio between the weights of equal volumes of a substance compared to an equal volume of water.

GRAY SCALE.

Scale of brightness values ranging from maximum to minimum brightness for a television system. A gray scale with 10 steps is usually included in resolution test charts.

GRD (GROUND).

1. Applied to the earth as a conductor of electricity. The voltage or potential of ground is assumed to be zero, and all voltages are measured with respect to ground.
2. Metallic, common-return conductor associated with a communication circuit or system.
3. Metallic connection with the earth to establish ground potential.
4. Conducting connection, whether international or accidental, between an electrical circuit or equipment and earth, or to some conducting body which serves in place of the earth.

GRE (GREENLAND).**GREASE-SPOT PHOTOMETER.**

Photometer employing a spot of grease on a screen. The spot appears to vanish when both sides of the screen are equally illuminated.

GREAT CIRCLE PATH (ROUTE).

Shortest distance between two points on a sphere. The plane of the path passes through the center of the sphere.

GREENWICH MEAN TIME.

Mean solar time at the meridian of Greenwich (zero longitude).

GRID.

1. System of lines superimposed on aerial photographs, mosaics, maps, charts, and other similar representations of the earth's surface which permits the identification of ground locations with respect to the indicated reference system (grid system).

2. Any of those elements within an electron tube which primarily govern the number of cathode-emitted electrons which arrive at the anode.

3. Electrode consisting of a wire mesh placed between the cathode and the anode in an electron tube so that the electrons must pass through it, and used as a control of the tube current by means of variations in the negative grid potential.

4. Metallic (commonly lead) part of either of the electrodes of a storage cell.

5. Any network of lines of a projection.

CONTROL. Grid, ordinarily placed between the cathode and an anode of an electron tube, for use as a control electrode.

SCREEN. Electrode between the control grid and the plate of an electron tube acting as an electrostatic shield between them, thus reducing the grid-to-plate capacitance.

SUPPRESSOR. Grid interposed between two electrodes (usually the screen grid and plate), both of which are positive with respect to the cathode, in order to prevent the passing of secondary electrons from one to the other. The suppressor grid is usually connected to the cathode.

GRID BATTERY.

Source of energy which supplies a voltage for biasing the grid of a vacuum tube.

GRID BEARING.

Bearing in which the direction of the reference line is grid north.

GRID BIAS.

DC voltage applied between the grid and the cathode of an electron tube.

GRID BLOCKING.

Blocking of capacitance-coupled stages in an amplifier, caused by the accumulation of charge on the coupling condensers due to grid current passed during the reception of large signals.

GRID CAPACITOR.

Capacitor which is connected in parallel with the

grid resistor and in series with the grid lead of an electron tube.

GRID CATHODE CAPACITANCE.

Direct capacitance between the grid and the cathode in a vacuum tube.

GRID CHARACTERISTIC.

Curve obtained by plotting grid-voltage values of a vacuum tube as abscissas against grid-current values as ordinates on a graph.

GRID CIRCUIT.

Circuit connected between the grid and cathode of a vacuum tube, forming the input circuit of the tube.

GRID CLIP.

Spring clip used to make a connection to the top cap terminal on some vacuum tubes.

GRID CONDUCTANCE.

In-phase component of the alternating grid current divided by the alternating grid voltage, all other electrode voltages being maintained constant.

GRID CONTROL TUBE.

Mercury-vapor-filled thermionic vacuum tube with an external grid control.

GRID CONTROLLED RECTIFIER.

Triode mercury-vapor rectifier tube in which the grid determines the instant at which plate current starts to flow during each cycle, but does not determine how much current will flow.

GRID COORDINATES.

Plane rectangular coordinates system, based on and mathematically adjusted to a map projection in order to readily translate geographic position (latitudes and longitudes) into plane coordinates.

GRID COURSE.

Course in which the direction of the reference line is grid north.

GRID CURRENT.

Current passing to or from a grid through space inside a vacuum tube.

GRID DETECTION.

Detection by rectification in the grid circuit of a detector.

GRID DIP METER.

Multiple-range oscillator incorporating a meter in the grid circuit to indicate grid current. The instrument is so named because the meter reading dips (reads lower grid current) when an external resonant circuit is tuned to the oscillator frequency.

GRID DIP OSCILLATOR.

Vacuum-tube oscillator having in its grid circuit a sensitive, current-indicating meter that dips (reads lower grid current) when energy is drawn from the oscillator, as by a coupled, resonant circuit tuned to the oscillator frequency.

GRID DRIVING POWER.

Average product of the instantaneous value of the grid current and the alternating component of the grid voltage over a complete cycle.

GRID EMISSION.

Electron or ion emission from a grid.

GRID GLOW TUBE.

Cold-cathode, gas-discharge tube containing one or more electrodes on which electrostatic charges control the starting of one-way current flow.

GRID LEAK.

High resistance which is connected across the grid capacitor or between the grid and the cathode for the purpose of providing a direct current path to limit the accumulation of charge on the grid.

GRID LIMITING.

Limiting the positive grid voltage (minimum output voltage) of vacuum-tube circuit by means of a large series grid resistor.

GRID LOCKING.

Defect of tube operation in which the grid potential becomes continuously positive owing to excessive grid emission.

GRID MODULATION.

1. Modulation produced by the application of

the modulating voltage to the control grid of any tube in which the carrier is present.

2. Modulating a radio-frequency carrier by varying the grid bias of an amplifier in accordance with the audio signal.

GRID NEUTRALIZATION.

Method of neutralizing an amplifier, in which the necessary 180° phase shift is obtained by an inverting network in the grid circuit.

GRID NORTH.

Arbitrary reference direction used in connection with the grid system of navigation. The reference direction is the top of the grid which, for polar navigation, is a grid of rectangular coordinates superimposed on the polar regions. One line on this grid coincides with the Greenwich Meridian. North on this grid is the upward direction usually the direction of the North Pole from Greenwich.

GRID PULSING.

Circuit arrangement of an RF oscillator in which the grid of the oscillator is biased so negatively that no oscillation takes place even when full plate voltage is applied. Pulsing is accomplished by removing this negative bias through the application of a positive pulse on the grid.

GRID PULSING.

Method of controlling the operation of a radio-frequency oscillator in which the oscillator-tube grid is biased negatively so strongly that no oscillation occurs even at full plate voltage, except when this negative bias is removed by the application of a positive voltage pulse to the grid.

GRID RESISTOR.

General term used to denote any resistor in the grid circuit.

GRID RETURN.

External conducting path for the return of grid current to the cathode.

GRID SUPPRESSOR.

Resistor sometimes connected between the control grid and the tuned circuit of a radio-frequency amplifier to prevent parasitic oscillations caused by grid-plate capacitance feedback.

GRID SWING.

Total variation in grid-cathode voltage from the positive peak to the negative peak of the applied signal voltage.

GRID VOLTAGE.

Voltage between a grid and the cathode of an electron tube.

GRID VOLTAGE SUPPLY.

Voltage supply that is used to supply the bias voltage to the grid of an electron tube.

GRID-BIAS CELL.

Used in the grid circuit of a vacuum tube to make the grid negative with respect to the cathode. It provides a voltage, but cannot supply appreciable current.

GRID-BIAS VOLTAGE.

Voltage applied or developed between the grid and cathode of a tube to influence the effect of the signal voltage in the input circuit of the grid.

GRID-LEAK DETECTION.

Detection by rectification in the grid circuit of a detector.

GRID-LEAK DETECTOR.

Triode or multi-electrode tube in which rectification occurs because of electron current to the grid. The voltage associated with this flow through a high resistance in the grid circuit appears in amplified form in the plate circuit.

GRID-PLATE CAPACITANCE.

Direct capacitance between the grid and the plate in a vacuum tube. Designated C_{gp} .

GRID-PLATE TRANSCONDUCTANCE.

Mutual conductance, which is the ratio of plate-current changes to grid-voltage changes.

GRID-POOL TANK.

Grid-pool tube having a heavy, metal envelope, somewhat resembling a tank in appearance.

GRID-PULSE MODULATION.

1. Modulation produced by the application of the modulating voltage to the control grid of any tube in which the carrier is present.
2. Modulating a radio-frequency carrier by varying the grid bias of an amplifier in accordance with the audio signal.

GROMMET.

Insulating washer, usually made of rubber or a plastic material, inserted in a chassis or panel hole to prevent a wire from touching the sides of the chassis or panel through which it must pass.

GROOVE.

Track cut in a phonograph record or other medium by the stylus during sound recording, or the track in which a phonograph needle rides during playback.

GROSS INFORMATION CONTENT.

Measure of the total information, redundant or otherwise, contained in a message. It is expressed as the number of bits or Hartleys required to transmit the message with specified accuracy over a noiseless medium without coding.

GROUND.

1. Applied to the earth as a conductor of electricity. The voltage or potential of ground is assumed to be zero, and all voltages are measured with respect to ground.
2. Metallic common-return conductor associated with a communication circuit or system.
3. Metallic connection with the earth to establish ground potential.
4. Conducting connection, whether intentional or accidental, between an electrical circuit or equipment and earth, or to some conducting body which serves in place of the earth.

GROUND ABSORPTION.

Loss of energy in transmission of radio waves due to dissipation in the ground.

GROUND ALERT.

Status in which aircraft on the ground are fully serviced and armed with combat crews in readiness to take off within a specified short period of time (usually 15 minutes) after receipt of a mission order.

GROUND BUS.

Conductor, usually large-diameter wire, used to connect a number of conductors to one or more grounding electrodes.

GROUND CABLE BOND.

Used for grounding the armor and/or sheaths of cables.

GROUND CLAMP.

Used for connecting a grounding conductor (ground wire) to a grounded object such as a water pipe.

GROUND CLUTTER.

Pattern produced on the screen of a radar indicator by undesired ground return.

GROUND CONDUIT.

Used solely to contain one or more grounding conductors.

GROUND CONTROL APPROACH.

Technique enabling ground personnel, employing electronic systems, to vector an aircraft to a precise approach and landing regardless of visibility.

GROUND CONTROL INTERCEPT STATION.

Ground-based radar employed to direct interceptors to target aircraft.

GROUND CONTROLLED APPROACH.

Radar system, normally portable or mobile, which provides both surveillance and precision approach information by which aircraft approaches may be directed from the ground via radio communications. Two separate functions are performed by GCA. The first is the vectoring and sequencing of all traffic within a terminal area. The second is the control of aircraft on final approach to a runway. This control is accomplished by means of ground-derived information, including distance from touchdown, deviation from a predetermined glide slope, and deviation from a predetermined course line.

GROUND CONTROLLED INTERCEPTION.

System employing radar techniques which will permit ground control of friendly aircraft or guided missiles for the purpose of effecting physical interception.

GROUND CURRENT.

1. Any current flowing in the earth.
2. That current that flows when the power line is shorted to ground.

GROUND DETECTOR.

Instrument or an equipment used for indicating the presence of a ground on an ungrounded system.

GROUND DIELECTRIC CONSTANT.

Dielectric constant of the earth at a given location.

GROUND DISTANCE.

Mean sea level, great-circle component of distance from one object to another.

GROUND ELECTRONICS OFFICER.

USAF officer who manages electronics activities including siting, installation, operation, calibration, maintenance, repair, and modification of mobile and fixed ground electronic equipment. Commands ground electronics units.

GROUND ENVIRONMENT.

General C-E term which is used to define the aggregate of all equipments installed on the ground which make up a C-E system, facility, station, set, etc. This should be distinguished from the equipments which may be installed and carried aboard an airborne craft, and hence would be termed as belonging to the air environment.

Note: The IFF system and a navigational aids system may be divided into the air and ground environment.

GROUND EQUALIZER INDUCTORS.

Coils, having relatively low inductance, inserted in the ground circuit going to one or more of the grounding points of an antenna to distribute the current to the various points in any desired manner.

GROUND FORM.

Crystalline form of any crystal system which is bounded by natural faces, all of which intersect the crystal axes. Ground form of the isometric system is the regular octahedron.

GROUND INDICATION.

Indication of the presence of a ground on one or more of the normally ungrounded conductors of a system.

GROUND LIAISON OFFICER.

Experienced army officer, generally of field grade,

stationed at airfields, whose principal duty is to assist in briefing and interrogation of pilots, and to serve in an advisory and liaison capacity to the Air Force commander.

GROUND LUG.

Lug used in connecting a grounding conductor to a grounding electrode.

GROUND OBSERVER CORPS.

Volunteer, civilian organization which reports movement of certain airborne objects to designated USAF agencies as an aid in the detection of such objects in the air defense system.

GROUND OUTLET.

Outlet equipped with a receptacle of the polarity type having, in addition to the current-carrying contacts, one grounded contact which can be used for the connection of an equipment grounding conductor.

GROUND PLANE ANTENNA.

Vertical antenna combined with a turnstile element to lower the angle of radiation, and having a concentric base support and center conductor that together serve to place the antenna at ground potential, even though it may be located several wavelengths above ground.

GROUND PLATE.

1. Plate of conducting material buried in the earth to serve as a grounding electrode.
2. Bottom, horizontal member to which the frame of a structure is secured.

GROUND POSITION INDICATOR.

Dead-reckoning computer with provision for taking account of drift.

GROUND POTENTIAL.

Zero potential with respect to the ground or earth.

GROUND PROTECTION.

Result of a device which causes an interruption in a power circuit, due to a defective ground.

GROUND RANGE.

In connection with airborne, radar-range measurements, the horizontal distance between the

object under consideration and a point on the earth's surface directly below the aircraft.

GROUND RESISTANCE.

Opposition of the earth to the flow of current through it. Its value depends on the nature and moisture content of the soil; the material, composition, and the physical dimensions of the connections to earth; and, the electrolytic action present.

GROUND RETURN.

1. Aggregate of received echoes due to reflection from the surface of the earth and fixed objects thereon.
2. Electronic circuit, antenna, or power lead to ground.

GROUND ROD.

Metal stake or pipe which is driven into the earth to provide a good conducting connection with the earth.

GROUND SPEED.

Rate of motion of an aircraft relative to the earth's surface.

GROUND SUPPORT EQUIPMENT.

Implements or devices which are required to repair, overhaul, assemble, disassemble, test, inspect, handle, and/or otherwise maintain an airplane or its components; includes those vehicles and items of equipment used to refuel, service, tow, and provide an auxiliary source of electric power for aircraft.

GROUND SWITCH.

Switch used to connect or disconnect a grounding conductor.

GROUND SYSTEM OF AN ANTENNA.

That portion of an antenna closely associated with and including an extensive conducting surface that may be the earth itself.

GROUND VELOCITY.

Rate of energy travel in an electromagnetic wave. It is the velocity of propagation of the envelope of a wave.

GROUND VISIBILITY.

Average range of vision in the vicinity of an airport as reported by an accredited weather observer on the ground.

GROUND WAVE.

Radio wave that is propagated over the earth. Ground waves include all components of waves over the earth except ionospheric and tropospheric waves. Ground waves are affected somewhat by the change in dielectric constant of the lower atmosphere and by proximity to the earth.

GROUND WIRE.

Conductor leading to an electric connection with the ground.

GROUND WIRE OF AN OVERHEAD LINE.

Conductor having grounding connections at intervals. It is usually suspended above, but not necessarily directly over, the line conductor and provides a degree of protection against lightning discharges.

GROUND/AIR DATA LINK.

Ground-to-air communications system that accepts control signals from ground computers and applies them intelligently to airborne weapons.

GROUND-AIR RADIO FREQUENCY.

One specified for transmissions from an aeronautical ground station to an aircraft station. Transmissions in the opposite direction use an air-ground radio frequency.

GROUND-CATHODE AMPLIFIER.

Electron tube amplifier with cathode at ground potential at the operating frequency, with input applied between control grid and ground and the output load connected between plate and ground.

GROUND-GROUND.

Communications between one point and one or more other points on the surface of the earth. Commonly referred to as ground-to-ground and point-to-point.

GROUND-REFLECTED WAVE.

Component of the ground wave that is reflected from the ground.

GROUND-RETURN CIRCUIT.

Circuit which has a conductor (or two or more in parallel) between two points and which is completed through the ground or earth.

GROUND-RETURN CURRENT.

Vector sum of the currents in all conductors on the electric supply line. Actually, the ground-return current, in this sense, may include components returning to the source in wires on other pole lines, but from the inductive coordination standpoint these components are substantially equivalent to components in the ground.

GROUND-SERVICE COMMUNICATIONS SYSTEM.

Two-way radio communications system consisting of a base station and one or more mobile and/or portable units for the efficient control of personnel and vehicles for maintenance expediting, ramp control, and related purposes.

GROUND-TO-AIR COMMUNICATION.

One-way communication from stations on the surface of the earth to aircraft.

GROUND-TO-GROUND.

Communication between two points on the ground.

GROUNDED.

Connected to earth or to some conducting body which serves in place of the earth.

GROUNDED CIRCUIT.

1. Circuit in which energy is carried one way over a metallic path and returned through the earth.
2. Circuit connected to earth at one or more points.

GROUNDED CONDUCTOR.

Conductor which is intentionally grounded, either solidly or through a current-limiting device.

GROUNDED SYSTEM.

System of conductors in which at least one conductor or point is grounded, either solidly or through a current-limiting device.

GROUNDING-CATHODE AMPLIFIER.

Electron-tube amplifier with the cathode at ground potential at operating frequency, with input applied between the control grid and ground; and the output load connected between plate and ground. (This is the conventional amplifier circuit).

GROUNDING-GRID AMPLIFIER.

1. Method of connecting a triode tube so that the input varies the potential of the cathode with respect to the grid. The grid is grounded and shields the input from the output circuit, preventing oscillation.

2. Electron-tube amplifier circuit in which the control grid is at ground potential at the operating frequency, with input applied between cathodes and ground, and output load connected between plate and ground. The grid-to-plate impedance of the tube is in parallel with the load instead of acting as a feedback path.

GROUNDING-GRID TRIODE.

Type of triode designed for use in a grounded-grid-triode circuit.

GROUNDING-GRID-TRIODE CIRCUIT.

Circuit in which the input signal is applied to the cathode and the output is taken from the plate; the grid is at RF ground and serves as a screen between the input and output circuits.

GROUNDING-GRID-TRIODE MIXER.

Triode in which the grid forms part of a grounded electrostatic screen between the anode and cathode, and is used as a mixer for centimeter wavelengths.

GROUNDING.

Connecting to ground or to a conductor which is grounded.

GROUNDING CONNECTION.

Connection used in establishing a ground.

GROUNDING ELECTRODE.

Conductor imbedded in the earth, used for maintaining ground potential on conductors connected to it, and for dissipating into the earth current conducted to it.

GROUNDING SWITCH.

Form of air switch by means of which a circuit or a piece of apparatus may be connected to ground.

GROUNDING TRANSFORMER.

Transformer intended primarily for the purpose of providing a neutral point for grounding purposes.

GROUP.

1. Flexible administrative and tactical unit, in Army, Air Force, and Marine Corps usage, composed of either two or more battalions or two or more squadrons. The term also applies to combat support and service support units.

2. Number of ships and/or aircraft, in Naval usage, normally a subdivision of a force, assigned for a specific purpose.

3. Consolidation of a number of interceptor tracks, in air defense usage, into a single, summarized display.

ADDRESS. Group of four letters assigned to represent command(s), authority(ies), activity(ies), unit(s) or geographic location(s); used primarily for the addressing of communications.

DUMMY. Group of dummy letters and/or figures.

GROUP A PARTS.

Group A parts of an electronic equipment are normally those items which may be permanently or semipermanently installed in an aircraft for supporting, securing, or interconnecting the components and controls of the equipment, and which will not in any manner compromise the security classification of the equipment.

GROUP B PARTS.

Group B parts of an electronic equipment are normally the operating or operable components of the equipment, which, when installed on or in connection with Group A parts, constitute the complete operable equipment.

GROUP FREQUENCY.

Number of sets or groups of waves passing in one second.

GROUP MODULATION.

Process by which a number of channels, already separately modulated to a specific frequency range, are again modulated to shift the group to another range.

GROUP VELOCITY.

1. Of a traveling plane wave, the velocity of propagation of the envelope of a wave occupying a frequency band over which the envelope delay is approximately constant. It is equal to the reciprocal of the rate of change of phase constant with angular frequency.

Note: Group velocity differs from phase velocity in a medium in which the phase velocity varies with frequency.

2. Velocity of propagation of pulse or group of waves.

GROUPING CIRCUITS.

Circuits used to interconnect two or more switchboard positions together, so that one operator may handle the several switchboard positions from one operator's set.

GROUPS PER MINUTE.

Used to express the actual number of five letter groups, either plain or code text, transmitted per minute by radiotelegraphy.

GROVE CELL.

Primary cell, having a platinum electrode in an electrolyte of nitric acid within a porous cup, outside of which is a zinc electrode in an electrolyte of sulphuric acid. This cell normally operates on a closed circuit.

GROWLER.

Electromagnetic device consisting essentially of two field poles arranged as in a motor, used for locating short-circuited coils and for magnetizing or demagnetizing objects. A growling noise indicates a short-circuited coil.

GRU (GROUP).

(Reference: GROUP.)

GS.

Wire material designation for galvanized steel wire.

GS (GENERAL STAFF).

1. Staff consisting of three staff groupings.
2. Any coordinating staff, including that of a general staff.
3. Group of military leaders, acting over and above the interests of any one service, who determine military strategy and policy for a national state, such as the German General Staff.

GS (GROUND SPEED).

Rate of motion of an aircraft relative to the earth's surface.

GSA (GOVERNMENT SERVICES ADMINISTRATION).**GT CUT.**

Crystal oscillator plate with a very constant frequency over a wide temperature range.

GTW (GROSS TAKEOFF WEIGHT).

Actual weight of aircraft at time of takeoff, including fuel, crew, cargo, passengers, etc.

GUARD.

In radio communications, to maintain a continuous receiver watch with transmitter ready for immediate use (Reference: LISTENING WATCH.)

U. Trough-like piece of steel covering a cable on the side of a pole.

GUARD ARM.

1. Cross arm placed across and in line with a cable to prevent damage to the cable.
2. Cross arm located over wires to prevent foreign wires from falling into them.

GUARD BAND.

Narrow frequency band left vacant between two channels to give a margin of safety against mutual interference.

GUARD RING.

Ring-shaped, metal structure placed around a charged terminal or object to insure uniform distribution of the charge over the surface of the object.

GUARD WIRE.

Grounded wire used on an overhead transmission line; it is so placed that should a voltage conductor break, it will be grounded by contact with the guard wire. Used frequently where high-voltage circuits cross public thoroughfares.

GUARDED.

Covered, shielded, fenced, inclosed, or otherwise protected, by means of suitable covers or casings, barrier rails or screens, mats or platforms, to remove the likelihood of dangerous contact or approach by persons or objects to a point of danger.

GUIDANCE.

1. Policy, direction, decision, or instruction, having the effect of an order when promulgated by a higher echelon.
2. Process of controlling the flight path through space by means of a mechanism within a missile.

GUIDANCE SYSTEM.

Obtains and develops target information for the determination of the desired flight path of a missile and communicates this intelligence in the form of commands to a missile flight-control system. A guidance system may be inertial, self-contained within the missile, or the guidance function may be performed by various combinations of ground and airborne components.

GUIDE WAVELENGTH.

Wavelength of electromagnetic energy conducted in a waveguide. The guide wavelength for all air-filled guides is always longer than the corresponding free-space wavelength.

GUIDED AIRCRAFT MISSILE.

Type of self-propelled missile, normally carried by a parent aircraft, which after launching can be guided to ground targets. Guided aircraft missiles will be designated with the prefix GAM followed by a numerical designator.

GUIDED AIRCRAFT ROCKET.

Type of self-propelled aircraft armament normally carried by a fighter aircraft for attack on airborne targets, and which, after launching, can be guided to the target. Guided aircraft rockets

will be designated with the prefix GAR followed by a numerical designator.

GUIDED MISSILE.

Unmanned vehicle moving above the surface of the earth, whose trajectory or flight path is capable of being altered by a mechanism within the vehicle.

GUIDED-MISSILE CONTROL.

Guidance or direction exercised over a guided missile during its flight to a target. (Reference: COMMAND GUIDANCE, INERTIAL GUIDANCE.)

GUIDED PROPAGATION.

Types of radio wave propagation in which radiated rays are bent excessively by refraction in the lower layers of the atmosphere. This bending creates an effect much as if a duct or waveguide has been formed to guide part of the radiated energy over distances far beyond the normal radar range.

GUIDED WAVE.

Wave whose propagation is concentrated in certain directions within or near the boundaries between materials of different properties located in the path at different places.

GUILLEMIN LINES.

Special type of artificial transmission line or pulse-forming network, used in high-level pulse modulation, to generate a nearly square pulse; used in radar sets to control pulse duration.

GULL.

Classified definition. (Reference: AFM 100-50.)

GUN (GUNNERY, GUNBOAT).

GUN-DEFENDED AREA.

Restricted area defended by antiaircraft weapons. Friendly airborne objects may fly over such an area only in accordance with established procedures.

GUN-DIRECTING RADAR.

Radar used to direct antiaircraft artillery or similar fire.

GUTTA-PERCHA.

Natural vegetable gum, similar to rubber, used principally as insulation for wires and cable. Is particularly suited for submarine cable insulation.

GUY.

Wire or stranded steel cable which is used to hold objects in place; especially, to support a pole or tower against overturning.

HEAD. Guy applying tension in the direction of the pole line.

SIDE. Guy applying tension at an angle to the line of the pole line.

GUY ANCHOR.

Buried weight or mass to which the lower end of a guy wire is attached.

GUY WIRE.

1. Wire used to brace the mast or tower of a transmitting or receiving antenna system.

2. Wire used to support a pole or tower.

GYROFREQUENCY.

Natural frequency of rotation of charged particles around the lines of force of the earth's magnetic field. For electrons, it is on the order of 700 to 1600 kilocycles per second, and for ions it is in the audio-frequency range.

GYROMAGNETIC.

Pertaining to the magnetic properties of rotating electric charges, such as spinning electrons moving within atoms.

GYROPLANE.

Heavier-than-air aircraft supported in flight by the reactions of the air on one or more rotors which rotate freely on substantially vertical axes.

GYROSCOPE.

Instrument which utilizes a rapidly rotating mass to maintain a stable equilibrium.

H

H

H.

1. Air defense abbreviation for Hostile, and is the classification of a track based upon established criteria indicating the airborne object to be that of an enemy. It may also be an identification if such action is taken.
2. A radar air-navigation system which employs an airborne interrogator to measure distance from two ground responder beacons. (Reference: SHORAN.)
3. Name applied to certain aircraft nondirectional radio beacons.

h (HENRY).

Unit of Inductance.

H-BEACON.

Nondirectional radio homing beacon which has a power output of 50 to 2000 watts.

H-BEND.

In waveguide technique, a smooth change in the direction of the axis of a waveguide, throughout which the axis remains in a plane perpendicular to that containing the direction of polarization.

H-CARRIER SYSTEM.

Low-frequency carrier system which provides one carrier channel, utilizing frequencies up to about 10 kilocycles, by means of effective four-wire transmission on a single openwire pair.

H-FRAME.

Tactical or fixed-plant type of poleline construction which is used to withstand the heavy pull stresses of long spans, dead-ends, or loading pots.

H-HOUR.

Term used to designate the hour for an attack to be launched, for an assault wave to land or for a movement to begin.

H-INDICATOR.

(Reference: H-SCOPE).

H-LINES.

Imaginary lines that represent, diagrammatically, the direction and strength of magnetic flux.

H-NETWORK.

Composed of five impedance branches, two connected in series between an input terminal and an output terminal, and the fifth connected from the junction point of the first two branches to the junction point of the second two branches.

H-PAD.

Attenuation network in which the elements are arranged in the form of the letter H.

H-PARTICLE.

Positive hydrogen ion or proton resulting from bombardment by alpha rays or swiftly moving positive ions.

H-SCOPE.

Type of radar indication. A modification of the B-Scope which provides three-dimensional target information on a single screen. Azimuth is the horizontal coordinate and range is the vertical coordinate. A target appears as two dots (double dot indication) side by side on the scope. Left-hand dot indicates range and azimuth. Right-hand dot is displaced vertically from left-hand dot to indicate relative elevation of the target.

H-VECTOR.

Represents the magnetic field of an electromagnetic wave. In free space, it is perpendicular to the E-vector and to direction of propagation.

H-WAVE.

Mode in which electromagnetic energy can be transmitted in a waveguide. An H-wave has an electric field which is entirely transverse (perpendicular to the length of the wave guide) and a magnetic field which has a longitudinal component in addition to its transverse component.

H16.

ITU designation for ship station of the second category carrying on 16 hours of service.

H24.

ITU designation for station carrying on continuous day and night service.

H8.

ITU designation for ship station of the second category carrying on 8 hours of service.

HAB (HIGH-ALTITUDE BOMBING).

Horizontal bombing from altitudes of over 15,000 feet.

HADC (HOLLOMAN AIR DEVELOPMENT CENTER).**HALF ADDER.**

Circuit having two input and two output channels for binary signals (0, 1) and in which the output signals are related to the input signals according to Table I.

Table I					
Input To		Output From			
A	B	S	C		
0	0	0	0	A	S
0	1	1	0		
1	0	1	0		
1	1	0	1	B	C

HALF-DUPLEX CIRCUIT.

Permits one-direction, electrical communications between stations. Technical arrangements may permit operation in either direction but not simultaneously. Therefore, this term is qualified by one of the following suffixes: S/O for send only; R/O for receive only; S/R for send or receive.

HALF-DUPLEX REPEATER.

Duplex telegraph repeater provided with interlocking arrangements which restrict the transmission of signals to one direction at a time.

HALF-LIFE.

Time interval used to measure the rate of decay of radioactive materials. In the first half-life, the amount of radioactive material left unchanged is one-half the original amount; in the next half-life interval, half the remaining amount or one-fourth the original amount remains. The half-life of different materials varies widely (several billion years to millionths of a second).

HALF-NUT.

Feed nut which engages half or less of the circumference of the lead screw, so that it may be withdrawn from the lead screw to stop the lateral scanning movement.

HALF-POWER WIDTH OF A RADIATION LOBE.

In a plane containing the direction of the maximum of the lobe, the full angle between the two directions in that plane about the maximum in which the radiation intensity is one-half the maximum value of the lobe.

HALF-TAP.

Bridge placed across conductors without disturbing their continuity.

HALF-WAVE ANTENNA.

Length is approximately equal to one-half the wavelength being transmitted or received.

HALF-WAVE DIPOLE.

Straight, ungrounded antenna substantially one-half wavelength long.

HALF-WAVE RECTIFICATION.

Process of rectifying an alternating current wherein only one-half of the input cycle is passed, the other half being locked by the action of the rectifier, thus producing pulsating direct current.

HALF-WAVE RECTIFIER.

Changes alternating current into pulsating direct current, utilizing only one-half of each cycle.

HALF-WAVE TRANSMISSION LINE.

Has an electrical length equal to one-half the wavelength of the signal being transmitted or received.

HALFTONE CHARACTERISTIC.

Fidelity of the recorded density shadings compared with the subject copy transmitted. May also be used to express the relationship between the facsimile signal and the subject copy or recorded copy.

HALO.

Small aura of light surrounding the spot on a fluorescent screen.

HAM.

Licensed radio operator who operates a station as a hobby rather than for commercial purposes.

HAND CAPACITANCE.

Occurs when the hand is brought near a tuning capacitor or other part in a receiver that is insufficiently shielded, changing the tuning.

HAND RECEIVER.

Earphone designed to be held to the ear by the hand.

HAND REEL UNIT.

Two-man, hand-carrier, steel bar arrangement for carrying field wire for laying in the field.

HAND RESET.

Term applied to a relay indicating that the contacts must be reset manually to their original positions when normal conditions are resumed.

HAND SET.

Receiver and transmitter mounted on a single frame, excluding other equipment.

HAND TELEPHONE SET.

Has a handset and a mounting which serves to support the handset when the latter is not in use.

HANDHOLE.

Subsurface chamber, too small for a man to enter, in the route of one or more wire or cable runs where work may be done.

HANDI-TALKIE.

Two-way radio communication unit small enough to be carried in the hand.

HANDOVER.

Process of transferring the air surveillance and control responsibility for interceptors between adjacent units of the same operational level.

HANGOVER.

Distortion produced when the facsimile signal changes from maximum to minimum signal conditions at a slower rate than required. This results in tailing on the lines in the recorded copy.

HAR (HARBOR).

Portion of a body of water protected, in such a way as to be a place of safety for ships.

HARD COPY.

Used with reference to the message in page form which is the result of a transmission.

HARD DRAWN COPPER WIRE.

Has been drawn to size through several dies, thus becoming hard and having greater tensile strength.

HARD MAGNETIC MATERIALS.

Are not easily demagnetized.

HARD RAY.

X-ray having high penetrating power.

HARD SOLDER.

Composed principally of copper and zinc, having a high melting point and requiring heating to a red heat for melting. Hard soldering is practically equivalent to brazing.

HARD TUBE.

High-vacuum, electronic tube.

HARDNESS.

That quality which determines the penetrating ability of X-rays. The shorter the wavelength, the harder and more penetrating are the rays.

HARDSTAND.

1. Paved or stabilized area on an air-base or air-field where aircraft are parked.
2. Paved or stabilized area where vehicles are parked.
3. Open ground area having a prepared surface and used for storage of material.

HARMFUL INTERFERENCE.

Radiation or induction which endangers the functioning of a radionavigation or safety service, or obstructions or repeated interruptions of a radio service operating in accordance with international radio regulations.

HARMONIC.

1. Integral multiple of a fundamental frequency.
2. Sound wave or electromagnetic wave with a frequency the exact multiple of the fundamental frequency. Harmonics of 60 cycles are 120 cycles, 180 cycles, 240 cycles, etc.

HARMONIC ANALYSIS.

1. Method of identifying and evaluating the harmonics that make up a complex wave form of

voltage, current, or some other varying quantity.

2. Expression of a given function as a series of sine and cosine terms that are approximately equal to the given function, such as a Fourier series.

HARMONIC ANALYZER.

Electrical or mechanical apparatus that divides a complex wave into its component pure sine waves. In effect, it measures the strength of each frequency component in a complex signal.

HARMONIC ANTENNA.

Length is an integral multiple of a half-wave-length. (Reference: LONG-WIRE ANTENNA.)

HARMONIC COMPONENT.

Of a periodic quantity, is any one of the simple sinusoidal quantities of the Fourier series into which the periodic quantity may be resolved.

HARMONIC CONTENT.

Degree of distortion in the output signal of an amplifier.

HARMONIC CONVERSION TRANSDUCER.

Output frequency is a multiple or a submultiple of the input frequency.

HARMONIC DETECTOR.

Voltmeter circuit so arranged as to measure only a particular harmonic of the fundamental frequency.

HARMONIC DISTORTION.

1. Production of harmonic frequencies at the output by the nonlinearity of a transducer when a sinusoidal voltage is applied to the input. Amplitude of distortion is usually a function of the amplitude of the input signal.

2. Condition that exists in the output of an amplifying circuit when harmonics, added during the process, alter the signal wave form.

3. Impairment of fidelity caused by the generation of new frequencies that are harmonics of the frequencies contained in the applied signal.

HARMONIC FILTER.

Combination of inductance and capacitance tuned to an undesired harmonic in a circuit, so as to

suppress that harmonic.

HARMONIC GENERATOR.

Vacuum tube or other generator operated under conditions in which it generates RF current having strong harmonics.

HARMONIC INTERFERENCE.

Interference between radio stations due to the presence of harmonics of the carrier frequency in the output of one or more of the stations.

HARMONIC MOTION.

Corresponds to that of a simple pendulum and is equivalent to the projection of uniform, circular motion onto any diameter of that circle. Sine wave represents simple harmonic motion.

HARMONIC PRODUCER.

Tuning-fork controlled oscillator device which is capable of producing odd and even harmonics of the fundamental tuning-fork frequency; used for the purpose of providing carrier frequencies for broad-band carrier systems.

HARMONIC RINGING.

System of selectively signaling the several parties on a subscriber's line with ringing currents which are harmonics of several fundamental frequencies.

HARMONIC TELEPHONE RINGER.

Responds only to alternating current within a very narrow frequency band. A number of such ringers, each responding to a different frequency, are used in one type of selective ringing.

HARMONIC WAVE ANALYZER.

Instrument that provides a means for determining the harmonic content at the output of an audio-frequency amplifier or other apparatus.

HARMONICS.

A frequency that is an integral multiple of the fundamental frequency.

HARNESS.

Wire and cables so arranged and tied together that they may be inserted and connected or removed after disconnection as a unit.

HARP.

Classified definition. (Reference: AFM 100-50.)

HARTLEY.

Unit of information content equal to one decadal decision or the designation of one of ten possible, and equally likely, values or states of anything used to store or convey information. It may be conveyed by one decadal code element. One Hartley equals $\log_{10} 2$ times one bit.

HARTLEY OSCILLATOR.

Electron-tube oscillator in which a paralleled-tuned tank circuit is connected between grid and plate, the inductive element of the tank having an intermediate tap at cathode potential.

HASH.

Electrical noise, such as generated within a receiver by a vibrator or mercury-vapor rectifier.

HAT.

To arrange a fixed quantity of symbols or groups of symbols in an entirely haphazard sequence, as if they had been drawn from a hat.

HAW (HAWAII).

Chain of islands located in the north central Pacific Ocean.

HAZARD BEACON.

Light beacon used to designate an extended or particularly dangerous hazard to air navigation.

HAZELTINE NEUTRALIZING CIRCUIT.

Early form of neutralized radio-frequency amplifier circuit.

HDF (HORIZONTAL DISTRIBUTING FRAME).

HE (HIGH EXPLOSIVE).

Substance which ignites to form gas with extreme rapidity and shattering effect.

HEAD.

1. Cutting head in a recorder, serving to produce grooves on a blank record.
2. Part of a motion-picture projector which converts the sound track on the film into corresponding of signals.

HEAD AMPLIFIER.

Audio-frequency amplifier mounted on or close to the sound head of a motion-picture projector

to amplify the extremely weak output of the phototube.

HEAD GUY.

Messenger cable (and attachments) which is placed in such a way as to exert a pull in the direction of the pole line.

HEADING.

Direction in which a ship, aircraft, or other mobile object is pointed with reference to a true, magnetic, compass, or grid north.

HEADLIGHT.

Radar antennas small enough to be housed in the thickness of a wing, like an automobile headlight, and with the beam operating in the manner of a searchlight.

HEADPHONES

Device having a diaphragm which vibrates according to current variations and reproduces incoming electric signals as sound.

HEADSET.

One or a pair of headphones with a connecting clamp designed to support the phones snugly against the ears.

HEAT COIL.

Protective device which grounds or opens a circuit, or does both, by means of a mechanical element which is allowed to move when the fusible substance that holds it in place is heated above a predetermined temperature by current in the circuit.

HEAT DETECTOR.

1. Temperature-sensitive device mounted on the inside surface of a vault to initiate an alarm in the event of an attack by heat or burning.
2. Device for detecting long infrared radiation.

HEAT LOSS.

Power dissipated as heat.

HEAT OF EMISSION.

Additional heat energy that must be supplied to an electron-emitting surface to maintain it at a constant temperature.

HEAT OF RADIOACTIVITY.

Heat generated per unit time by radioactive disintegration.

HEAT WAVES.

Infrared radiation; similar to radiowaves, but of higher frequency.

HEAT-EYE TUBE.

Cathode-ray tube powered by a midget generator for use as an infrared, night-seeing instrument.

HEATER.

Electron-tube element which indirectly heats the cathode.

HEATER CURRENT.

Current flowing through a heater.

HEATING EFFECT OF A CURRENT.

Rate at which heat is produced in an electric current of constant resistance is proportional to the square of the current.

HEATING ELEMENT.

Complete, wire-wound resistor, including terminals and insulating supports, as used in electric heating devices.

HEAVISIDE LAYERS.

Layers of ionized gas, existing in the region between 50 and 400 miles above the surface of the earth, which bend some frequencies of radio waves back to earth under certain conditions. (Reference: KENNELLY-HEAVISIDE LAYER.)

HED (HEADQUARTERS).

1. Command echelon of a unit or other organization, consisting of a commander and his staff.
2. When used in such designations as Headquarters, Air University, or Headquarters, Tenth Air Force, a unit made up of the commander and his staff, together with the administrative and service personnel, both officer and enlisted, who provide essential services for the commander and his staff in the operation of the command. The commander of this unit is also the commander of the overall command, as the commander of Headquarters, Air Defense Command is also the commander of the Air Defense Command.
3. Geographical center of authority of any organization.

HEI (HIGH EXPLOSIVE INCENDIARY).**HEIGHT.**

Vertical distance of a fixed point above ground level or some specified datum other than mean sea level.

HEIGHT FINDER.

Radar which measures the altitude of an airborne object.

HEIGHT OVERLAY.

Shows the height of all structures within an urban area.

HEIGHT SUPERVISOR.

Noncommissioned officer responsible to the direction center air surveillance officer for operation of the height-finding section. Term used in SAGE operations.

HEIGHT TECHNICIAN.

Airman in the direction center air surveillance branch who is responsible for obtaining altitude data from height finders on specified airborne targets by semiautomatic methods or from height-range indicator operators by manual method.

HEIGHT-POSITION INDICATOR.

Radar display which shows simultaneously angular-elevation slant range and height of objects detected in the vertical sight plane.

HEIGHT-RANGE INDICATOR.

Cathode-ray tube from which altitude and range measurements of airborne objects may be viewed.

HEIGHT-RANGE INDICATOR OPERATOR.

Airman at a long-range-radar site who uses a height finder to obtain altitude information on airborne objects.

HEISING MODULATION.

Method of modulating a carrier wave in which the plates of both the radio-frequency oscillator and modulator tubes are fed through a common inductor having a high impedance. The inductor prevents any change in total plate current drawn by the two tubes together; hence, audio-frequency plate-current variations in the modulator tube produce similar but opposite audio-frequency variations in the plate current of the radio-frequency oscillator tube.

HEL (HELICOPTER).

Revolving wing aircraft.

HELICAL.

Having the shape of a helix or coil.

HELICAL SCANNING.

1. Scanning in which a point on the RF beam describes a distorted helix. The antenna rotates continuously about the vertical axis while the elevation angle changes slowly from zero to 90° .
2. Method of scanning in which the elemental area sweeps across the copy, due to the motion of a helix. The most common form uses a combination of a single-turn helix on a cylinder and a straight bar. The contact point between the bar and the helix traverses from one side to the other as the cylinder is rotated. The spiral on the cylinder is called the helix and the straight bar is called the helix bar.

HELIOGRAPH.

Mirror device for signalling by means of the sun's rays.

HELIX.

Space curve resembling a corkscrew. Wire wound on a cylinder produces a helix.

HELIX RECORDER.

Makes use of the intersection of a helix with a bar parallel to the axis of the helix to locate the position of the spot to be recorded.

HELMHOLTZ COIL.

Phase-shifting network consisting of fixed and movable coils. With a constant input, fixed in phase, the output may be continually shifted in phase from 0° to 360° . Used to determine range in certain radar equipment.

HEMIMORPHIC.

Terminated at the two ends by dissimilar sets of faces.

HENRY.

Centimeter-gram-second electromagnetic unit of inductance or mutual inductance. The inductance of a circuit is one henry when a current variation of one ampere per second induces one volt. It is the basic unit of inductance. In radio, smaller units are used, such as the millihenry

(mh), which is one thousandth of a henry, and the microhenry (uh), which is one millionth of a henry.

HEPTODE.

Seven-electrode, vacuum tube containing an anode, a cathode, a control electrode, and four additional electrodes, usually of grids.

HERMES.

Surface-to-surface, rocket-powered, guided missile using liquid propellant. It has a fin or wing span of 8 feet, 2 inches; a length of 25 feet, 5 inches; and a diameter of 2 feet, 10 inches. Gross weight is 8,000 pounds. The missile has a speed of Mach 2, a range of 50 miles, and can attain an altitude of 100,000 feet. Guidance is by the beamrider technique.

HERMETICALLY SEALED.

Tight enough to keep out air and moisture.

HERMIT.

Mobile ground radio transmitter, AN/MRW-2, used for controlling guided missiles and war-weary aircraft. It is a remote control set with an output of 25 watts. Transmission using AM is in the 65-93 mc band; transmission using FM is in the 30-40 mc band. The set weighs 115 pounds.

HERTZ.

Unit of frequency equal to one cycle per second; rarely used in the United States.

HERTZ ANTENNA.

Antenna system which does not depend, for its operation, upon the presence of ground. Its resonant frequency depends upon its distributed capacitance and inductance, which are determined by its physical length. (Reference: MARCONI ANTENNA.)

HERTZ EFFECT.

Promotion of ionization and a spark discharge under the application of ultraviolet radiation.

HERTZIAN OSCILLATOR.

Two metal plates or other conductors separated by an air gap, forming a capacitor of very small capacitance in which ultra-high-frequency oscillations can occur.

HERTZIAN VECTOR.

Pertains to the electromagnetic field of a radio wave. Both the electric and magnetic intensities can be specified in terms of it. (Reference: POYN-
TING'S VECTOR.)

HETERODYNE.

1. Process of combining a receiver wave with a locally generated wave in a nonlinear device, with the result that frequencies equal to the sum and difference of the combining frequencies are produced.
2. To beat or mix two frequencies in a nonlinear component in order to produce different frequencies from those introduced.

HETERODYNE CONVERSION TRANSDUCER.

The useful output frequency is the sum or difference of the input frequency and an integral multiple of the frequency of another wave.

HETERODYNE DETECTION.

Detection (or conversion) by means of the heterodyne principle; used in the generation of the intermediate frequency of a superheterodyne receiver, and in making CW signals audible.

HETERODYNE DETECTOR.

Detector, incorporating a local oscillator (called a beat-frequency oscillator), used to convert an incoming RF signal to an audible tone by the heterodyning process.

HETERODYNE FREQUENCY.

Frequency which is produced by combining two other frequencies and which is their numerical sum or difference.

HETERODYNE FREQUENCY METER.

Frequency-measuring device that heterodynes the unknown signal with an internally produced signal of known frequency. The difference-frequency signal, usually within the audible range, is then measured.

HETERODYNE OSCILLATOR.

Oscillator which produces a desired frequency by combining two other frequencies. This frequency may be an audio frequency produced by combining two radio frequencies, or it may be some desired radio frequency, such as the intermediate frequency of a superheterodyne circuit.

(Reference: BEAT-FREQUENCY OSCILLATOR.)

HETERODYNE PRINCIPLE.

Principle of the production of beats (beat frequencies) having a frequency equal to the difference between two compared frequencies.

HETERODYNE RECEPTION.

Process of reception in which a received high-frequency wave is combined in a nonlinear device with a locally generated wave, with the result that in the output there are frequencies equal to the sum and difference of the combining frequencies. If the received waves are continuous waves of constant amplitude, as in telegraphy, it is customary to adjust the locally generated frequency so that the difference of the frequencies is audible. If the received waves are modulated, the locally generated frequency is generally such that the difference frequency is superaudible and an additional operation is necessary to reproduce the original signal wave. (Reference: BEAT RECEPTION.)

HETERODYNE WAVEMETER.

Wavemeter employing the heterodyne principle to compare the frequency being measured with a frequency being generated in a calibrated oscillator circuit. (Reference: HETERODYNE FREQUENCY METER.)

HETERODYNE WHISTLE.

Steady squeal heard in a radio receiver due to a beat formed by heterodyne interference between stations having nearly equal carrier frequencies.

HETERODYNING.

Process of combining two signals of frequencies in a nonlinear device, thereby producing a number of new frequencies. Of these, there are two main frequencies, one being equal to the sum of the original frequencies, and the other to their difference. Heterodyning ordinarily makes use of the difference-frequency signal (beat) only.

HETEROGENEOUS.

Composed of different kinds or parts of materials. Opposite of homogeneous.

HEXADECIMAL.

Scheme for representing numbers. Characterized by arrangement of digits in sequence with the understanding that successive digits are to be interpreted as coefficients of successive powers of an integer called the base of the number system. (Reference: POSITIONAL NOTATION.)

HEXODE.

Six-electrode, vacuum tube containing an anode, a cathode, a control electrode, and three additional electrodes usually of grids.

HF (HIGH FREQUENCY).

1. Frequency band: 3 mc to 30 mc.
2. Wavelength: 10 meters to 100 meters.

HF/DF (HIGH FREQUENCY, DIRECTION FINDING).

HFORL (HUMAN FACTORS OPERATIONS RESEARCH LABORATORIES).

HH BEACON.

Nondirectional, radio homing beacon which has a power output of 2000 watts or greater.

HIGH DEFINITION.

Television or facsimile equivalent of high fidelity.

HIGH FIDELITY.

Term applied to an audio component, amplifier, or system. Ideally, it is the ability to reproduce faithfully, that is, with a minimum of distortion, the full audio range of frequencies. While no universal standard has been set up, this range is generally agreed to be approximately 20-20,000 cycles. However, the term is often loosely applied to units whose range falls short of these limits. (Reference: HIGH DEFINITION.)

HIGH FREQUENCY.

1. Frequency band: 3 mc to 30 mc.
2. Wavelength: 10 meters to 100 meters.

HIGH Q.

High ratio of reactance to effective resistance. Factor determining coil efficiency.

HIGH-ALTITUDE, VHF OMNI-RANGE.

VHF Omni-Range which, by virtue of the in-

creased geographical co-channel spacing, is capable of providing navigational guidance at longer distances to aircraft flying at altitudes above 20,000 feet. The term HIGH-ALTITUDE VOR indicates a geographical separation of VOR'S operating on the same radio frequency rather than a distinctive type of facility.

HIGH-CONFIDENCE COUNTERMEASURES.

ECM schemes which are very difficult to defeat by the enemy, and which may, therefore, be expected to retain their value for a period of years. (Reference: AFM 100-50.)

HIGH-FIDELITY RECEIVER.

Radio receiver capable of receiving and satisfactorily reproducing, without distortion, the AF modulation impressed on carrier waves. Such a receiver approaches the goal if the reproduced program cannot be distinguished from the original sound picked up by the microphone.

HIGH FREQUENCY ALTERNATOR.

Alternator capable of generating radio frequencies of sufficiently high value for use as carrier waves in radio communication.

HIGH-FREQUENCY BROADCAST BAND.

Band of frequencies originally extending from 43,000 to 50,000 kc, allocated exclusively to FM broadcast service. At present, the band from 88,000 to 108,000 kc is allocated to FM broadcast service.

HIGH-FREQUENCY BROADCAST STATION.

Station licensed primarily for the transmission of emission intended to be received by the general public and operated on a channel in the high-frequency broadcast band, using frequency modulation exclusively.

HIGH-FREQUENCY CARRIER TELEGRAPHY.

That form of carrier telegraphy in which the carrier current have their frequencies above the range transmitted over a voice-frequency telephone channel.

HIGH-FREQUENCY FURNACE.

Induction furnace in which the primary is a water-cooled coil and the secondary is the metal to be

melted. Currents, at frequencies about 500 cps in the primary, induce eddy currents in the secondary which give enough heat to cause melting.

HIGH-FREQUENCY RESISTANCE.

Resistance presented to the flow of HF currents. (Reference: SKIN EFFECT, RADIO-FREQUENCY RESISTANCE.)

HIGH-FREQUENCY TONE.

Inaudible tone used with a detector for identifying cable without disturbing service.

HIGH-FREQUENCY TREATMENT.

Therapeutic use of intermittent and isolated trains of heavily damped oscillations having high frequency, high voltage, and relatively low current.

HIGH-INTENSITY APPROACH LIGHTS.

Configuration of aeronautical ground lights in the approach area to a runway or channel intended to assist a pilot in making an approach to that runway or channel.

HIGH-LEVEL MODULATION.

Modulation produced at a point in a system where the power level approximates that at the output of the system; it is also called plate modulation.

HIGH-MU TUBES.

Tubes having a very high amplification factor.

HIGH-ORDER ELECTRONIC RECONNAISSANCE.

Classified definition. (Reference: AFM 100-50.)

HIGH-PASS FILTER.

Selective transducer which efficiently passes waves of all frequencies down to a certain frequency (cutoff frequency) and effectively bars waves having frequencies lower than the cutoff frequency.

HIGH-PERFORMANCE EQUIPMENT.

Equipments having sufficiently exacting characteristics to permit their use in trunk or link circuits.

HIGH-RESISTANCE VOLTMETER.

Voltmeter having a resistance considerably higher than 1000 ohms per volt, so that it draws very little current from the circuit in which a measurement is made.

HIGH-SPEED CARRY.

(Reference: CARRY.)

HIGH-SPEED TELEGRAPH TRANSMISSION.

Transmission of code at speeds higher than are possible with hand-operated keys.

HIGH-TENSION.

Circuits having dangerously high voltages, of the order of thousands of volts.

HIGH-TRADE CRYPTOGRAPHIC SYSTEM.

System designed to provide lasting security, that is, inherently resisting solution for a comparatively long period of time.

HIGH-VACUUM PHOTOTUBE.

Phototube that is evacuated to such a degree that its electrical characteristics are essentially unaffected by gaseous ionization. In a gas phototube, some gas is intentionally introduced.

HIGH-VACUUM RECTIFIER.

Vacuum-tube rectifier in which conduction is entirely by electrons emitted from the cathode.

HIGH-VACUUM TUBE.

Electron tube evacuated to such a degree that its electrical characteristics are essentially unaffected by gaseous ionization. (Reference: HARD TUBE.)

HIGH-VOLTAGE AND LOW-VOLTAGE WINDINGS.

High voltage or low voltage, as applied to transformers, is used to distinguish the winding having the greater, from that having the lesser, voltage rating.

HIGHEST POSSIBLE FREQUENCY.

Arbitrarily chosen frequency value, 15 percent above the F2 layer MUF for the circuit. For the E layer, the highest probable frequency (HPF) is equal to the MUF.

HIGHLIGHT.

Brightest part of a reproduced image.

HIGHWAY DRAWING.

Wiring diagram in which each wire is assigned an arbitrary number as an aid to its identification

within a common base line which represents the group of wires connecting items of the equipment.

HILL AND DALE RECORDING.

Phonograph recording in which the cutting stylus of the sound recorder moves up and down rather than from side to side during recording. (Reference: VERTICAL RECORDING.)

HISTOGRAM.

Experimental frequency distribution which shows the number of quantities of particular magnitudes.

HJ.

ITU designation for station open from sunrise to sunset (day service).

HOLD LAMP.

Indicating lamp which remains lighted while a telephone connection is being held.

HOLDER.

Command or activity authorized to draw and hold publications according to established distribution lists.

HOLDING COIL.

Separate coil of a relay which is energized by the operation of the relay and holds the relay in operation after the original operating circuit is de-energized.

HOLDING TIME.

Period of time a trunk or circuit is in use on a call, including operator's time in connecting and user's conversation.

HOLOHEDRAL.

Having the full number of faces corresponding to the development of the complete maximum symmetry possible to the crystal system in question.

HOMING.

1. Procedure of using the direction-finding equipment of one radio station with the emission of another radio station, where at least one of the stations is mobile, and whereby the mobile station proceeds continuously toward the other station.

2. Operation of restoring a switch to normal position.

HOMING ADAPTER.

Device which, when used with an aircraft radio receiver, produces aural and/or visual signals which indicate the direction of a transmitting radio station with respect to the heading of the aircraft.

HOMING AND BUSTING.

Used by armed aircraft capable of homing on and destroying sources of electronic radiations.

HOMING ANTENNA.

Type of directional antenna array that is useful when it is desired to fly directly to a target.

HOMING BEACON.

Radio transmitter which emits a distinctive or characteristic signal used for the determination of bearings, courses, or locations.

HOMING DEVICE.

1. Automatic device that starts up in the correct direction of motion or rotation at all times. A nonhoming device may first go in the opposite direction to the end of its travel.
2. Radio device that guides an aircraft to an airport or to the site of a radio transmitter.

HOMING GUIDANCE.

Form of missile guidance wherein the missile steers itself toward a target by means of a mechanism actuated by some distinguishing characteristic of the target.

HOMING STATION.

Radio aid to navigation incorporating DF facilities.

HOMODYNE RECEPTION.

Reception in which the carrier wave is locally supplied or reinforced relative to the side bands.

HOMOGENEOUS.

Of the same kind or nature. The opposite of heterogeneous.

HOMOLOGOUS FIELD.

Field in which the lines of force in a given

plane all pass through one point. The electric field between two coaxial charged cylinders is an example.

HOMOPOLAR.

Electrically symmetrical; having equal distribution of charge.

HOMOPOLAR GENERATOR.

Generator in which all the poles presented to the armature are of the same polarity. DC machines usually have a single pair of poles, each pole completely surrounding the armature, so that the armature conductor always cuts magnetic lines of force in the same direction. A pure direct current is thus produced without commutation.

HONEST JOHN.

U.S. Army surface-to-surface ballistic missile. It receives no guidance after launching and, therefore, it is not a guided missile in the usual sense of the word. It is rocket propelled and is launched from a simple, mobile rail and aimed like an artillery piece. It has an overall length of 21 feet, a fin or wing span of 8 feet, and a body diameter of 2.5 feet. The range is comparable to long-range artillery.

HONEYCOMB COIL.

Coil in which the turns are wound in criss-cross fashion to reduce distributed capacitance.

HOOD.

Shield placed over a cathode-ray tube to eliminate extraneous light and thus make the image on the screen appear clearly.

HOOKE SWITCH.

Hook or plunger-operated switch, commonly part of a telephone set, that will open the circuit when the instrument is not in use.

HOOKEUP.

Method of connection between the various units which compose a radio receiver is called the hook-up of that receiver. This word is also applied to the diagram of connections used.

HOP.

Excursion of a radio wave from the earth to the ionosphere and back to earth, in traveling from one point to another. It is usually used in

expressions such as single-hop, double-hop, and multi-hop. The number of hops is called the order of reflection.

HOPPER.

Container in an aircraft in which chaff is placed, ready for dispensing.

HORIZ (HORIZONTAL).

(Reference: HORIZONTAL.)

HORIZON.

Apparent or visible junction of earth and sky as seen from any specific position on or above the earth. It bounds that part of the earth's surface that is reached by the direct wave of radio station. The distance to the horizon is affected by atmospheric refraction. (Reference: RADAR HORIZON, INTERMEDIATE HORIZON.)

HORIZONTAL.

1. Perpendicular to the direction of gravity.
2. In the direction of, or parallel to, the horizon.
3. On a level.

HORIZONTAL ANGLE OF DEVIATION.

From transmitter to receiver of a wave, the horizontal angle between the great-circle path and the direction of departure or arrival along the line of propagation.

HORIZONTAL AXES.

General name given to the three horizontal axes of crystallographic reference.

HORIZONTAL CENTERING CONTROL.

Control provided in a television receiver or cathode-ray oscilloscope to shift the position of the entire image horizontally in either direction on the screen.

HORIZONTAL CONTROL.

Control which determines horizontal positions only, as with respect to parallels and meridians or to other lines of reference.

HORIZONTAL DEFLECTING ELECTRODES.

Pairs of electrodes that serve to move the electron beam horizontally from side to side on the fluorescent screen of a cathode-ray tube employing electrostatic deflection.

HORIZONTAL FIELD STRENGTH DIAGRAM.

Representation of the field-strength at a constant distance from an antenna and in a horizontal plane. Unless otherwise specified, this plane is that one which passes through the antenna.

HORIZONTAL POLARIZATION.

Electric field (E-vector) parallel to the horizon. An antenna in which the dipoles are horizontally polarized.

HORIZONTALLY POLARIZED WAVES.

Linearly polarized wave whose direction of polarization is horizontal. A horizontally polarized wave is one in which the electric intensity is parallel to the earth.

HORIZONTAL RETRACE.

Horizontal flyback.

HORIZONTAL SWEEP.

Scanning motion from left to right across a picture or scene being televised.

HORIZONTAL SYNCHRONIZING IMPULSE.

Impulse transmitted after each line is scanned, in a television system for the purpose of keeping the receiver in synchronism with the transmitter.

HORN.

1. Tube of varying cross-sectional area for radiating or receiving acoustic waves.
2. Primary element consisting of a part of a metal waveguide in which one or both cross-sectional dimensions increase toward the open end.

HORN ANTENNA.

Antenna having the shape of a tube whose cross-sectional area increases toward the open end, and through which radio waves pass.

HORN ARRESTOR.

Lightning arrester in which the spark gap has upwardly projecting diversion horns of thick wire, up which the arc travels as soon as it is formed. When the arc reaches the widest part of the gap, it extinguishes.

HORN GAP.

Type of spark gap which is provided with divergent electrodes.

HORN MOUTH.

End of the horn with the larger-cross-sectional area.

HORN RADIATOR.

Open-ended, metallic device for concentrating energy from a waveguide and directing this energy into space.

HORN THROAT.

End of the horn with the smaller cross-sectional area.

HORN-GAP SWITCH.

Form of air switch provided with arcing horns.

HORSEPOWER.

Unit of power equal to 550 foot-pounds per second, and electrically equivalent to nearly 746 watts.

HORSESHOE MAGNET.

Permanent magnet or electromagnet bent into the shape of a horseshoe or having parallel sides like a U, to bring the two poles near each other.

HOSTILE.

Air defense expression, which is the classification of a track based upon established criteria, indicating the airborne object to be that of an enemy. It may also be an identification, if such action is taken.

HOT.

1. Connected, alive, energized; pertains to terminal, or any ungrounded conductor.
2. Not grounded.

HOT CATHODE.

Cathode in which electron emission is produced by heat.

HOT-CATHODE, X-RAY TUBE.

High-vacuum, X-ray tube in which the cathode is heated in order to produce the emission of electrons.

HOT-WIRE AMMETER.

Instrument in which current is measured by sending it through a fine wire, which is thereby heated. The resulting expansion or sag of the wire is used to deflect the meter pointer. It can

be used to measure either alternating current or direct current, since both having the same heating effect, but is used chiefly at radio frequencies.

HOT-WIRE ANEMOMETER.

Instrument for measuring the velocity of wind or a moving gas by means of its cooling effect on an electrically heated wire.

HOT-WIRE INSTRUMENT.

Instrument which depends for its operation on the expansion by heat of a wire carrying a current.

HOT-WIRE MICROPHONE.

Microphone which depends for its operation on the change in resistance of a hot-wire, due to the change in temperature caused by the cooling effect produced by a sound wave.

HOT-WIRE VOLTMETER.

Hot-wire ammeter which has a suitable series resistance for voltage measurements.

HOUSE CABLE.

Distribution cable within the confines of a single building or a series of related buildings, but excluding cable run from the point of entrance to a cross-connecting box, terminal frame, or point of connection to a block cable.

HOUSEKEEPING EQUIPMENT.

Items listed in Tables of Allowances which are required for the shelter, health, welfare, and administration of personnel and which are issued on memorandum receipt to users with property responsibility remaining with the base supply officer.

HOUSING.

Covering over apparatus, usually removable.

HOW (HOWITZER).**HOWL.**

An undesirable prolonged sound produced by a radio receiver or audio-frequency amplifier system because of either electric or acoustic feedback.

HOWL REPEATER.

Condition in telephone repeater operation where more energy is returned than sent, resulting in an oscillation being set up in the circuit.

HOWLER.

1. Electromechanical device which produces an audio-frequency tone.

2. (Telephone) An associated unit by which the test desk operator may connect a high tone of varying loudness to a subscriber's line, to call the subscriber's attention to the fact that his receiver is off the hook.

HP (HORSEPOWER).

Unit of power equal to 550 foot-pounds per second, and electrically equivalent to nearly 746 watts.

HPDS (HOSPITAL PROGRAM DISTRIBUTION SYSTEM).**HPF (HIGHEST PROBABLE FREQUENCY).**

Arbitrarily chosen frequency value 15 percent above the F2 layer MUF for the circuit. For the E layer the highest probable frequency (HPF) is equal to the MUF.

HP HR (HORSEPOWER HOUR).**HQ (HEADQUARTERS).**

(Reference: HED (HEADQUARTERS) .)

HR (HOUR, HEIGHT RANGE).**HRI (HEIGHT-RANGE INDICATOR).**

Cathode-ray tube from which altitude and range measurements of airborne objects may be viewed.

HRI (HEIGHT-RANGE INDICATOR SCOPE).**HRIOp (HEIGHT-RANGE INDICATOR OPERATOR).**

In air defense, an airman at a long-range-radar site who uses a height finder to obtain altitude information on airborne objects.

HS (HERMETICALLY SEALED, HIGH STRENGTH).**HS (HEIGHT SUPERVISOR).**

In air defense, a noncommissioned officer responsible to the direction center air surveillance officer for operation of the height-finding section.

HT.

HF carrier telegraph channel.

HT (HEIGHT TECHNICIAN).

In air defense, an airman in the direction center air surveillance branch who is responsible for obtaining altitude data from height finders on specified airborne targets by semiautomatic methods or from height-range indicator operators by manual method.

HUE.

Dominant wavelength which distinguishes a color as red, yellow, etc. Often synonymous with the term color, but does not include grey. Varying saturations may have same hue in color television terminology.

HUM.

In audio-frequency systems, a low-pitched droning noise, usually composed of several harmonically related frequencies, resulting from an ac power supply or from ripple from a dc power supply or from induction due to exposure to a power system. By extension, the term is applied in visual systems to interference resulting from similar sources. In facsimile, it is a pattern produced on the record sheet due to power-line frequency or harmonics of the power-line frequency mixing with the facsimile signal or modulating the facsimile signal.

HUM MODULATION.

Hum that is heard in a receiver only when a station is tuned in.

HUMMING.

Sound produced by transformers having loose laminations or by magnetostriction effects in iron cores. The frequency of the sound is twice the power-line frequency.

HUNTING.

1. Mechanical oscillation in a servo system due to improper adjustment of control voltage, servo amplifier, or feedback.
2. Synchronous motor is said to hunt when it tends to drive ahead of synchronous speed, then fall back several times a second (for small motors). The average speed of the motor is not affected unless the hunting causes the motor to fall out of synchronism.

3. Power - Erratic engine operation, caused by the inability of a governor to respond accurately to changes in engine speed.

4. Radar - Mechanical oscillation in a servo system due to improper adjustment of control voltage, servo amplifier, or feedback.

5. Operation of a selector in moving from terminal to terminal until one is found which is idle.

HUSH UP.

Project for airborne secure communications.

HV (HEAVY, HIGH VOLTAGE).

HVAR (HIGH-VELOCITY AIRCRAFT ROCKET).

Any large air-to-ground aircraft rocket specially designed for high velocities, such as a rocket developed by the U.S. during World War II, nicknamed Holy Moses.

HWY (HIGHWAY).

HX.

ITU designation for station having no specific working hours.

hy (HENRY).

Centimeter-gram-second electromagnetic unit of inductance or mutual inductance. The inductance of a circuit is one henry when a current variation of one ampere per second induces one volt. It is the basic unit of inductance. In radio, smaller units are used such as the millihenry (mh), which is one thousandth of a henry, and the microhenry (uh) which is one millionth of a henry.

HYBRID.

Transformer or combination of transformers or resistors affording paths to three branches, circuits A, B and C, so arranged that A can send to C, B can receive from C, but A and B are effectively isolated. A hybrid coil or resistance network, with an associated artificial line, is the essential functional element of a four-wire, terminating set and isolates the transmitting branch from the receiving branch.

HYBRID BALANCE.

Loss between two conjugate sides of a hybrid set less the same loss when one of the other sides is open or shorted. It is determined by the degree of balance between impedances connected to the other two sides of the hybrid set and is given by the formula for return loss.

HYBRID COIL.

Single transformer which has, effectively, three windings, and which is designed to be connected to four branches of a circuit so as to render these branches conjugate in pairs.

HYBRID ELECTROMAGNETIC WAVE.

Wave which has both transverse and longitudinal components of displacement.

HYBRID SET.

Two or more transformers interconnected to form a network having four pairs of accessible terminals to which may be connected four impedances so that the branches containing them may be made conjugate in pairs.

HYBRID T.

Waveguide interconnector which has four waveguide terminals, and which is designed to be connected to four branches of a circuit so as to render these branches conjugate in pairs.

HYBRID TRANSFORMER.

Hybrid coil.

HYDROELECTRIC.

Pertaining to the production of electricity by means of water power.

HYDROGEN.

Gas which has the simplest known atom, consisting of only one proton and one electron.

HYDROGEN ELECTRODE.

Electrode composed of platinum covered with platinum black, around which a stream of hydrogen is bubbled. It furnishes a standard electrode potential for comparison with other electrode potentials.

**HYDROLOGICAL AND METEOROLOGICAL
FIXED STATION.**

Fixed station, the emissions of which are used

for the automatic transmission of either hydrological or meteorological data, or both.

**HYDROLOGICAL AND METEOROLOGICAL LAND
STATION.**

Land station, the emissions of which are used for the automatic transmission either hydrological or meteorological data, or both.

**HYDROLOGICAL AND METEOROLOGICAL
MOBILE STATION.**

Mobile station, the emissions of which are used for the automatic transmission of either hydrological or meteorological data, or both.

HYDROMETER.

Graduated float used in measuring specific gravity of a liquid, such as that of a storage battery electrolyte.

HYDROPHONE.

Electroacoustic transducer which responds to waterborne sound waves and delivers essentially equivalent electric waves. There are many types of hydrophones whose definitions are analogous to those of corresponding microphones, such as crystal hydrophone, magnetic hydrophone, and pressure hydrophone.

HYGROSTAT.

Device for closing a pair of contacts when the air humidity reaches a prescribed level.

HYPERAN.

Electronic bombing system.

HYPERBOLIC HORN.

Horn whose equivalent cross-sectional radius ($25/\sqrt{S}$) increases according to a hyperbolic law, where S is the cross-sectional area of the horn.

HYPERBOLIC NAVIGATION SYSTEM.

Certain pulse-type methods of radionavigation, in which two or more properly synchronized ground stations transmit pulses. An aircraft or ship receives the pulses and records the difference in their time of arrival, which is a measure of the difference in its distance from the two ground stations and which establishes its location on a particular hyperbolic curve out of the large number of curves drawn on the maps

used. A second reading from another pair of stations (or from the same master and a different slave station) establishes its location on a different hyperbolic curve, the intersection of which with the first curve gives the position fix. Systems using this principle are the British GEE and American LORAN.

HYPERFREQUENCY WAVES.

Microwaves having wavelengths in the range from one centimeter to one meter.

HYPERSONIC.

Faster than five times the speed of sound. Sound travels at 1078 feet per second in air at sea level, or 735 MPH.

HYSTERESIS.

Lagging of the magnetic flux in a magnetic material behind the magnetizing force which is producing it. Caused by molecular friction within the material.

HYSTERESIS ERROR.

Difference between the readings of a measuring instrument containing iron when the current is brought up to a definite value and when the current is reduced from a larger value to that same definite value.

HYSTERESIS LOOP.

Hysteresis loop for a magnetic material in a cyclicly magnetized condition is a curve (usually with rectangular coordinates) showing two values of the magnetic induction for each value of the magnetizing force, one when the magnetizing force is increasing, the other when it is decreasing.

HYSTERESIS LOSS.

Power loss in an iron-core transformer or other alternating current device due to magnetic hysteresis.

HYSTERESIS METER.

Instrument for measuring the amount of hysteresis loss in a ferromagnetic material independently of other losses. It usually depends on the torque produced when the test specimen is placed in a rotating magnetic field or is rotated in a stationary magnetic field.

HYSTERESIS MOTOR.

Synchronous motor without salient poles and without direct-current excitation, which starts by virtue of the hysteresis losses induced in its hardened steel secondary member by the revolving field.

I (INCEDIARY, INDICATOR).

I SCOPE.

Type of radar presentation which is related to type C and is produced by a system using conical scanning. The echo signal appears on the indicator screen as a bright, circular segment whose position on the screen indicates the bearing of the target and whose radius is proportional to its range. The circular length of the segment is proportional to the error in aiming. The scanning beam; true aim produces a full circle.

I SIGNAL.

Fine chrominance transmission primary 0-1.5 mc wide, which combines with Q signal to convey chrominance information. Comprises sidebands produced by modulating subcarrier 57° from reference burst. Called in-phase signal. Color television terminology.

I/S.

Ratio normally expressed in decibels of the interference per kilocycle to the signal carrier power of the receiver. The interference is averaged over the pass band of the receiver or over the interference spectrum, whichever is the smaller.

I-R (INTERROGATOR-RESPONDER).

Radio transmitter and receiver combined to interrogate a transponder and display the resulting replies.

IAD (INITIATION AREA DISCRIMINATOR).

Cathode-ray tube and photoelectric cell combination. The photoelectric cell picks up unmapped, uncorrelated long-range data for processing by the automatic-initiation program of the computer.

IADS (INTER-AMERICAN DEFENSE BOARD).

IAS (INDICATED AIRSPEED).

1. Airspeed shown by an airspeed indicator.
2. In British usage, calibrated airspeed.

IAZ (INNER ARTILLERY ZONE).

Defined airspace, in an air defense situation, in which all aircraft, friendly, hostile, or otherwise, will be engaged by antiaircraft artillery.

IBM (INTERNATIONAL BUSINESS MACHINES).

ICA (INTERNATIONAL COOPERATION ADMINISTRATION).

ICAF (INDUSTRIAL COLLEGE OF THE ARMED FORCES).

ICAO (INTERNATIONAL CIVIL AVIATION ORGANIZATION).

Organization established to develop the principles and techniques of international air navigation, and to foster the planning and development of international air transport.

ICAO STANDARDS AND RECOMMENDED PRACTICES.

1. Standard: Any specification for physical characteristics, configuration, materiel, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international navigation and to which Contracting States will conform in accordance with the Convention; in the event of impossibility of compliance, notification to the Council is compulsory under Article 38;
2. Recommended practice: Any specification for physical characteristics, configuration, materiel, performance, personnel, or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity, or efficiency of international air navigation, and to which Contracting States will endeavor to conform in accordance with the Convention.

ICONOSCOPE.

Electronic camera tube for television. A picture, focused on a light-sensitive mosaic inside the tube, is converted into electrical charges which, when scanned by a high-speed electron beam, produces a train of electrical signals.

ICONOSCOPE CAMERA.

Cathode-ray tube used in a television camera to convert an optical image into corresponding electrical impulses by scanning the image on a mosaic screen with an electron beam.

ICS (INTERPHONE CONTROL STATION).

ICW (INTERRUPTED CONTINUOUS WAVE).

ID (IDENTIFICATION).

Determination of an airborne object's friendly or hostile character during Warning Red or Yellow. This may be accomplished by flight-plan correlation, visual observation, or acceptance of an identification passed from another unit (if continuous surveillance has been in effect).

ID (INSIDE DIAMETER).

IDEAL BUNCHING.

Theoretical condition in which the bunching of electrons in a velocity-modulated tube would give a single, infinitely large current peak during each cycle.

IDEAL CRYSTAL.

Having no mosaic structure and capable of X-ray reflection in accordance with the Darwin-Ewald-Prins law.

IDEAL DIELECTRIC.

Dielectric in which all the energy required to establish an electric field in the dielectric is returned to the field is removed. A perfect dielectric must have zero conductivity. Also, all absorption phenomena must be lacking. A vacuum is the only known perfect dielectric.

IDEAL TRANSDUCER.

Ideal transducer for connecting a specified source to a specified load is a hypothetical linear passive transducer which dissipates no energy and which, when connected to the specified source and load, presents to each its conjugate impedance. Such a transducer transfers the maximum theoretically possible power from the source to the load.

IDEAL TRANSFORMER.

Imaginary transformer which neither stores nor dissipates energy. It is a transformer having self and mutual impedances which are pure inductance of infinitely great values and one which has a unity coefficient of coupling.

IDENTIFICATION.

Determination of an airborne object's friendly or hostile character during Warning Red or Yellow. This may be accomplished by flight-plan correlation, visual observation, or acceptance of

an identification passed from another unit (if continuous surveillance has been in effect).

IDENTIFICATION BEACON.

Code beacon used to identify positively a particular point on the surface of the earth.

IDENTIFICATION CIRCUIT.

Circuit which is established for the purpose of passing identification information relative to the movement of aircraft from CAA air-route traffic-control centers or military flight service centers to air-defense installations.

IDENTIFICATION, FRIEND OR FOE.

System using radar transmissions to which equipment carried by friendly forces automatically responds, for example, by emitting pulses, thereby distinguishing themselves from enemy forces. It is the primary method of determining the friendly or unfriendly character of aircraft and ships by other aircraft or ships and by ground forces employing radar detection equipment and associated IFF units.

IDENTIFICATION OFFICER.

Officer responsible to the Senior Director for the classification and/or identification of tracks in accordance with existing regulations and procedures.

IDENTIFICATION PANEL.

Specially shaped and/or colored cloth or other material displayed in accordance with a prearranged code to convey messages.

IDENTIFICATION TECHNICIAN.

Noncommissioned officer who assists the identification officer in the SAGE center.

IDF (INTERMEDIATE DISTRIBUTING FRAME).

IDIOCHROMATIC.

Having photoelectric properties characteristic of the material of the pure crystal itself, and not due to foreign matter.

IDLER PULLEY.

Pulley used only for tightening a belt or changing its direction. The shaft of the pulley does not drive any other part.

IDO (IDENTIFICATION OFFICER).

Officer responsible to the senior director of a SAGE center for the classification and/or identification of tracks in accordance with existing regulations and procedures.

IDT (IDENTIFICATION TECHNICIAN).

Noncommissioned officer who assists the identification officer in a SAGE center.

IDTRC (INDOCTRINATION DIVISION AIR TRAINING COMMAND).**IF (INTERMEDIATE FREQUENCY).**

1. Fixed frequency to which all carrier waves are converted in a superheterodyne receiver.
2. Carrier frequency used in a stage of modulation intervening between the original signal and the final modulated carrier.
3. Frequency to which a signaling wave is shifted locally as an intermediate step in transmission or reception.
4. Frequency resulting from the combination of the received signal and that of the local oscillator in a superheterodyne receiver. (Reference: HETERODYNE.)

IFF (IDENTIFICATION, FRIEND OR FOE).

System using radar transmissions to which equipment carried by friendly forces automatically responds, for example, by emitting pulses, thereby distinguishing themselves from enemy forces. It is the primary method of determining the friendly or unfriendly character of aircraft and ships by other aircraft or ships and by ground forces employing radar detection equipment and associated IFF units.

IFF COORDINATION.

Unit for coordination of IFF trigger, range indicator trigger and radar, and IFF displays on an indicator.

IFR (INSTRUMENT FLIGHT RULES).

Directives which govern flight procedures under conditions requiring the pilot to fly other than by Visual Flight Rules.

IFR (INSTRUMENT FLIGHT RULES) CONDITIONS.

Weather conditions below the minimum prescribed for flights under VFR.

IFRB (INTERNATIONAL FREQUENCY REGISTRATION BOARD).**IGF (IMPRACTICABLE FOR THE GOVERNMENT TO FURNISH).****IGN (IGNITION).****IGNITION COIL.**

Iron-core transformer having an open core, a heavy primary winding connected to a battery or other direct-voltage source through a vibrating amature contact, and a secondary winding having many turns of fine wire. It converts a low direct voltage to a value of the order of 20,000 volts, required to produce a spark for ignition purposes in gasoline engines.

IGNITION SYSTEM.

For internal combustion engines, a method of electrically igniting the compressed, combustible mixture in the engine cylinders.

Note. This may be accomplished electrically by the use of spark plugs and a high-tension magneto, together with necessary wiring; or by electric energy from a storage battery together with suitable interrupting mechanism induction coil, etc. For internal combustion engines of the diesel-type using oil as fuel, the heat of compression ignites the combustible mixture.

IGNITOR.

Electrode that is partly immersed in the mercury-pool cathode of an ignitron and used to initiate conduction at the desired points in each cycle.

ILAS (INSTRUMENT LOW-APPROACH SYSTEM).

Mobile Air Force instrument landing system.

ILLUMINOMETER.

Portable photometer designed to measure the illumination on a surface.

ILS (INSTRUMENT LANDING SYSTEM).

System which provides the horizontal and vertical guidance and the distance information necessary for an aircraft landing. Specifically, a radio navigational aid which consists essentially of two transmitters which transmit fixed intersecting

vertical and horizontal radio beams, plus radio marker beacons at various distances from the run. The intersection of these beams determines the proper path of the landing aircraft. The transmitter for the vertical or localizer beam operates in the VHF band. The glide slope beam operates in the UHF band. From a practical standpoint, this system is not in itself adequate for actual landing of the aircraft. The addition of a radar altimeter in the aircraft to effect the flare-out would make possible a true instrument low approach landing. The nomenclature for the new mobile localizer transmitter is the AN/MRN-7. The new glide slope transmitter is designated as the AN/MRN-8. Older ILS equipment is designated SCS-51.

IM.

VHF boundary marker (CAA).

IMAGE.

One of two groups of sidebands generated in the process of modulation. The unused group is referred to as the unwanted image.

IMAGE ANTENNA.

Imaginary counterpart of an actual antenna, assumed for mathematical purposes to be located below the surface of the ground and symmetrical with the actual antenna above ground.

IMAGE DISSECTOR.

Cathode-ray tube developed for television cameras by P. T. Farnsworth. It converts a scene into corresponding electrical impulses that form a video signal.

IMAGE DISTORTION.

Failure of the reproduced image in a television receiver to appear the same as that scanned by the television camera.

IMAGE EFFECT.

Effect produced on the field of an antenna due to the presence of the earth. Electromagnetic waves are reflected from the earth's surface and these reflections often are accounted for by an image antenna at an equal distance below the earth's surface.

IMAGE FREQUENCY.

1. In heterodyne frequency converters in which one of the two sidebands produced by beating is selected, the image frequency is an undesired input frequency capable of producing the selected frequency by the same process. The word image implies the mirror-like symmetry of signal and image frequencies about the beating oscillator frequency or the intermediate frequency, whichever is the higher.

2. Carrier frequency of a undesired signal which is capable of combining with the frequency of the local oscillator in a superheterodyne, thus forming the intermediate frequency, and eventually being reproduced together with the desired signal. For example, if the intermediate frequency is 500 kilocycles, a locally generated signal of 5-500 kilocycles combined with signals of either 5,000 or 6,000 kilocycles would result in the proper intermediate frequency. If the 5,000 kilocycles signal is the desired one, the 6,000 kilocycle is the image frequency.

3. In superheterodyne reception, the image frequency is a radio frequency which is as far removed on one side from the intermediate frequency as the desired signal is on the other side.

IMAGE IMPEDANCES.

Of a transducer, the impedances which will simultaneously terminate all of its inputs and outputs; the impedances in both directions are equal.

IMAGE INTERFERENCE.

In a superheterodyne receiver, the condition in which a station broadcasting on the image frequency for a particular tuning-dial setting is heard along with the desired station. Both stations differ from the oscillator frequency by the intermediate-frequency value and the receiver circuits do not have sufficient selectivity to reject the higher frequency undesired signal.

IMAGE ORTHICON.

Television camera tube of high sensitivity for use in the studio and outdoors. It features a scanning beam of low-velocity electrons and several stages of electron multiplication. Capable of picking up scenes in semi-darkness.

IMAGE RATIO.

Ratio of the field strength at the image frequency to the field strength at the desired frequency, each field being applied in turn, under specified conditions, to produce equal outputs.

IMAGE RESPONSE.

Response of a superheterodyne receiver to the image frequency, as compared to the response to the desired frequency; usually expressed in decibels.

IMAGE-INTERFERENCE RATIO.

In a superheterodyne receiver, a rating indicating the effectiveness of the preselector in rejecting signals at the image frequency.

IMITATIVE COMMUNICATIONS DECEPTION.

Classified definition. (Reference: AFM 100-50.)

IMITATIVE DECEPTION.

Transmission of messages in the enemy's communication channels with the intention of deceiving the enemy.

IMITATIVE RADIO COMMUNICATION DECEPTION.

Classified definition. (Reference: AFM 100-50.)

IMP (IMPREGNATE).**IMPACT EXCITATION.**

Starting of damped oscillations in a radio circuit by a sudden surge, such as that produced by a spark discharge.

IMPAIRMENT.

Diminish in quantity, value, or strength.

DISTORTION TRANSMISSION. Condition where the band-width is less than the 2,750 cycles between 250 and 3,000 cycles resulting in poorer transmission of intelligence than if the full band were used. The degree is expressed in db DTI.

NOISE TRANSMISSION. Reduction in useful value of a telephone circuit due to noise; expressed db NTI.

IMPEDANCE.

1. Ratio of the effective value of the potential

difference between the terminals under consideration to the effective value of the resulting current, where there is no source of power in the portion of the circuit under consideration.

2. Total opposition offered to the flow of an alternating current. It may consist of any combination of resistance, inductive reactance, and capacitive reactance.

3. That property of an electrical circuit which opposes the flow of current. While a resistance is an impedance, the term is usually reserved for the opposition to current flow offered by inductors, capacitors, or combinations of both.

ACOUSTIC. Total acoustic resistance of a medium to sound waves. Force per unit area on the surface of the medium divided by the flux through that surface. This impedance is expressed in lines and is equal to the mechanical impedance divided by the surface area. Acoustic impedance contains both acoustic resistance and acoustic reactance.

CHARACTERISTIC. Of a transmission line, the impedance which the line would have if it were of infinite length.

CONJUGATE. Impedance having resistance components which are equal and reactance components which are equal in magnitude but opposite in sign.

DRIVING-POINT. At any pair of terminals of a network, the ratio of an applied potential difference to the resultant current at these terminals, all terminals being terminated in any specified manner.

FREE. Of a transducer, the impedance at the input of the transducer when the impedance of its load is made zero.

IMAGE. Of a transducer, the impedances which will simultaneously terminate all of its inputs and outputs in such a way that at each of its inputs and outputs the impedances in both directions are equal.

INPUT. Impedance presented by a device to the source.

ITERATIVE. Of a transducer, that impedance which, when connected to one pair of terminals, produces a like impedance at the other pair of terminals.

LOADED. Of a transducer, the impedance at the input of the transducer when the output is connected to its normal load.

MATCHED. Condition which exists when two coupled circuits are adjusted so that the impedance of one circuit equals the impedance of the other.

MOTIONAL. Of a transducer, the complex remainder after the blocked impedance has been subtracted from the loaded impedance.

OPEN-CIRCUIT. Of a line or four-terminal network, the driving-point impedance when the far-end is open.

OUTPUT. Impedance presented by a device to the load.

PLATE-LOAD. Impedance in the plate circuit across which the output signal voltage is developed by the alternating component of the plate current.

REFLECTED. Impedance which appears at the input terminals as a result of the characteristics of the impedance at the output terminals.

SELF. At any pair of terminals of a network the ratio of an applied potential difference to the resultant current at these terminals, all other terminals being open.

SENDING-END. Of a line, the ratio of an applied potential difference to the resultant current at the point where the potential difference is applied. The sending-end impedance of a line is synonymous with the driving-point impedance of the line. For an infinite uniform line the sending-end impedance and the characteristic impedance are the same; and for an infinite periodic line the sending-end impedance and the iterative impedance are the same.

SHORT-CIRCUIT. Of a line or four-terminal network, the driving-point impedance when the far-end is short-circuited.

SOURCE. Impedance presented by a source of energy to the input terminals of a device.

SURGE. Characteristic impedance of a transmission line. When a transmission line is terminated in a load equal to its surge impedance, no reflection will occur and no standing waves will appear.

TERMINAL. Complex impedance as seen at the unloaded output or input terminals of a transmission equipment or line which is otherwise in normal operating condition.

TRANSFER. Between any two pairs of terminals of a network, the ratio of a potential difference applied at one pair of terminals to the resultant current at the other pair of terminals, all terminals being terminated in any specified manner.

WAVE. Of a transmission line at any specified plane, the complex ratio at every point in that plane, of the transverse component of the electric field to the transverse component of the magnetic field. Both incident and reflected waves may be present.

IMPEDANCE BRIDGE.

Circuit used to measure the combined resistance and inductance of a device.

IMPEDANCE CHARACTERISTIC.

Graph of the impedance of a circuit plotted against frequency.

IMPEDANCE COIL.

Used to impede the flow of alternating current by its inductive reactance. (Reference: CHOKE COIL.)

IMPEDANCE COMPENSATOR.

Electric network designed to be associated with another network or a line for the purpose of giving the impedance of the combination a desired characteristic with frequency over a desired frequency range.

IMPEDANCE COUPLING.

Use of an inductor or an impedance coil as the common coupling element between two circuits.

IMPEDANCE IRREGULARITIES.

Discontinuities or abrupt changes in an impedance-frequency curve which result from junctions between unlike sections of a transmission line or irregularities on a line.

IMPEDANCE MATCHING.

1. Connection, across a source impedance, of an impedance having the same magnitude and the same angle.
2. Method of minimizing the adverse effects of junctions between dissimilar transmission lines as, for instance, cable and open wire whereby a transformer or auto transformer is used to interconnect the two, or loading coils are used to modify the impedance characteristic of a cable so as to match the open wire.

IMPEDANCE TRANSFORMER.

Device used to provide a maximum transfer of energy from one circuit to another.

IMPEDANCE TRIANGLE.

Diagram consisting of a right angle triangle with sides proportional to the resistance and reactance, respectively, of an alternating current and with the hypotenuse representing the impedance of the circuit. The cosine impedance is the power factor of the circuit.

IMPEDANCE-MATCHING TRANSFORMER.

Transformer used to obtain an impedance match between a source and load.

IMPEDOR.

Corresponding phraseology to resistor, inductor, and capacitor. It is rarely used.

IMPERFECT DIELECTRIC.

Dielectric in which a part of the energy required to establish an electric field in the dielectric is not returned to the electric system when the field is removed. The energy not returned is converted into heat in the dielectric.

IMPREGNATED.

Impregnated means that a suitable substance replaces the air between its fibers, even though this substance does not fill completely the spaces between the insulated conductors.

IMPRESSED VOLTAGE.

Voltage applied to a circuit or device.

IMPULSE.

Force acting for a comparatively short period of time, such as a momentary rise in voltage and generally meant to be of unidirectional polarity.

IMPULSE COUNTER, MAGNETIC.

Relay with two step armatures and their associated contacts whose function is to register dial pulses.

IMPULSE EXCITATION.

Method of producing oscillatory current in a circuit in which the duration of the impressed voltage is relatively short compared with the duration of the current produced.

IMPULSE FREQUENCY.

Number of pulse periods per second generated by the dial pulse springs in opening and closing in rapid succession in response to the dialing of a digit. (Reference: PULSE SPEED.)

IMPULSE GENERATOR.

1. Electric apparatus suitable for the production of high-voltage surges used for testing insulators and for other purposes. (Reference: SURGE GENERATOR, LIGHTING GENERATOR.)
2. Oscillator circuit that generates electric impulses for synchronizing purposes in a television system.

IMPULSE NOISE.

1. Noise due to disturbances having abrupt changes and of short duration. These noise impulses may or may not have systematic phase relationships. It is noise characterized by non-overlapping transient disturbance. The same source may produce impulse noise in one system and random noise in a different system.
2. In telephone operations, noise characterized by transient disturbances separated in time by quiescent intervals. The frequency spectrum of these disturbances must be substantially uniform over the useful pass band of the transmission system.

IMPULSE PERIOD.

(Reference: PULSE PERIOD.)

IMPULSE RADIATION.

Impact fluorescence.

IMPULSE SEPERATOR.

In a television receiver, the circuit that separates the horizontal synchronizing impulses in the received signal from the vertical synchronizing impulses.

IMPULSE SPEED.

Time rate at which a telephone dial mechanism makes and breaks the circuit to transmit pulses.

IMPULSE TRANSMISSION.

Form of signaling used principally to reduce the effects of low-frequency interference which employs impulses of either or both polarities for transmission to indicate the occurrence of transitions in the signals. The impulses are generally formed by suppressing the low-frequency components, including direct current, of the signals.

IMPULSE TRAIN.

Group of pulses of similar characteristics. (Reference: PULSE TRAIN.)

IMPULSE-DRIVEN CLOCK.

Electric clock in which the hands are moved forward at regular intervals by current impulses controlled by a master clock.

IMPULSE-TYPE TELEMETER.

Employs electric impulses as the translating means.

IN-LINE TUNING.

Method of tuning the IF strip of a superheterodyne receiver in which all the IF amplifier stages are made resonant to the same frequency. This type of tuning results in a narrow IF bandwidth.

IN-PHASE.

Condition that exists when two waves of the same frequency pass through their maximum and minimum values of like polarity at the same instant.

IN-PHASE COMPONENT.

Component of an alternating voltage or alternating current due to resistance alone, independently of reactance.

IN-STEP.

(Reference: IN-PHASE.)

INC (INCOMPLETE).

INCANDESCENCE.

State of a body in which its temperature is so high that it gives off light. Example: The sun, or the filament of an electric lamp.

INCANDESCENT LAMP.

Electric lamp in which the light is produced by electric current flowing through a filament of resistance material, heating it to incandescence.

INCEP (INTERCEPT).

1. Distance from the origin to the point where a line, curve, or surface cuts a particular axis on a graph.
2. To cut off or bound some part of a line or other geometric figure.

INCIDENCE ANGLE.

Angle between an approaching light ray or emission and the perpendicular (normal) to the surface in the path of the ray.

INCIDENT.

Refers to a wave traveling in a direction toward the load. Example: Incident radar wave.

INCIDENT FIELD INTENSITY.

Field strength of a downcoming sky-wave without including the effects of earth reflections at the receiving location.

INCIDENT WAVE.

In a medium of certain propagation characteristics, a wave which impinges on a discontinuity or medium of different propagation characteristics.

INCLINATION.

The angle which a line, surface, or vector makes with the horizontal. Thus magnetic inclination, also called magnetic dip, is the angle that the magnetic field of the earth makes with the horizontal at a particular location.

INCLINOMETER.

Instrument for measuring inclination. A magnetic needle pivoted in a vertical plane is used to

indicate the magnetic inclination of the earth's magnetic field.

INCOMING TRUNK.

Trunk coming into a central office.

INCREASED INTELLIGENCE WATCH.

Condition of command alertness directed by the Commander in Chief North American Air Defense Command when closer scrutiny and evaluation of intelligence is required.

INCREMENT.

Change in the value of a variable. It is usually a small amount added to the given value of the variable.

INCREMENT BORER.

Tool for taking wood samples from a pole to determine depth of creosote treatment or extent of rot.

INCREMENTAL HYSTERESIS LOSS.

Losses when a magnetic material is subjected to a pulsating magnetizing force.

INCREMENTAL PERMEABILITY.

Ratio of the cyclic change in magnetizing force when the mean magnetic induction differs from zero.

IND (INDUCTANCE).

Property of a circuit which tends to oppose a change in the existing current and is present only when the current is changing.

IND (INTERCEPT DIRECTOR).

Officer in the Direction Center Weapons Branch responsible for monitor and control of interceptors in a SAGE center.

INDEFINITE CALL SIGN.

Sign which does not represent a specific facility, command, authority, activity, or unit, but which may represent any one or any group of these.

INDEX OF CO-OPERATION.

In facsimile, the product of the scanning drum diameter in inches and the number of scanning lines per inch.

INDEX OF MODULATION.

Modulation factor.

INDEX OF REFRACTION.

Ratio of the speeds of a light ray or other radiation in two different materials. It determines the amount the ray will be refracted or bent when passing from one material to the other, such as from air to water.

INDICATING FUSE.

Protective device which is placed in a telephone circuit; it consists of a fuse, a pilot lamp, a relay, and a buzzer. When a line fault blows the fuse, the lamp lights and the buzzer sounds, thus providing visual and audible indication of the line fault. (Reference: FUSE ALARM.)

INDICATING INSTRUMENT.

Instrument in which the present value of the quantity measured is indicated by the position of a pointer relative to a scale.

INDICATING LAMP.

Indicates the position of a device or the condition of a circuit.

INDICATOR.

That component of a set, such as a radar set, by which the data obtained by the set is presented for visual observation. Type of presentation on a cathode-ray indicator in which time is one coordinate (horizontal) and signals appear as deflectives in a direction perpendicular to the time scale (vertical). (Reference: A-SCAN.)

AZIMUTH STABILIZED PLAN POSITION. Presentation of signals on a plan position indicator arranged so the top of the screen represents a fixed direction and not the plane's tail-nose axis. The fixed direction may be north or may be established by a gyroscope.

COURSE LINE DEVIATION. Cross-pointer instrument which indicates deviation from a course line.

DIRECTION-FINDER BEARING. Instrument which is used with an airborne radio direction finder to indicate the relative, magnetic, or true bearing of a station from an aircraft, or the reciprocal of this bearing. A direction-finder bearing indicator of the manual type is

known as an MDF bearing indicator, and one of the automatic type is known as an ADF bearing indicator.

DROP Indicator for signaling, consisting of a hinged flap normally held up by a catch. The catch is released by an electromagnet, allowing the flap to drop when a signal is made.

GROUND POSITION. Dead-reckoning computer, similar to an API, with provision for taking account of drift.

HEIGHT-RANGE. Radar indicator which is capable of showing the height and range of a target.

LOCAL. Radar operator's indicator as contrasted to the remote indicator for the pilot or navigator.

MAGNETIC DIRECTION. Instrument providing compass-indication obtained electrically from a remote gyro-stabilized magnetic compass or equivalent.

MESSAGE. Element placed within a message to serve as a guide to the selection or derivation and application of the correct key in order to facilitate the prompt decryption of the message.

MOVING TARGET. Device which limits the display of radar information primarily to moving targets.

MULTIPLE CALL. Last entry on line two of a multiple call message which indicates the total number of routing indicators in that line.

OMNI-BEARING. Instrument which provides automatic and continuous indication of omni-bearing.

PILOT DIRECTION. Meter that indicates to the pilot the direction and amount of change in heading that should be applied at any one time.

RADAR. Cathode-ray tube which is used to give a visual presentation of the signal returned from the target.

RADIO MAGNETIC. Dual indicator provided with an automatic means for stabilization of the rotatable scale to conform with the heading of the aircraft. It provides automatic and continuous indication of magnetic bearing, relative bearing, airplane heading, and drift, using signals from two fixed stations.

REMOTE. Radar indicator which is connected in parallel with the radar operator's indicator, but which is located so as to be visible to the navigator or pilot.

ROUTING. Routing indicator is a group of letters, engineered and assigned to identify a station within a teletypewriter network.

SYSTEM. Group of symbols indicating which cryptochannel (system) was used to encrypt the message.

TERRAIN CLEARANCE. Device for measuring the distance from an aircraft to the surface of the sea or ground.

TO-FORM. Instrument which shows whether the numerical reading of an omni-bearing selector for an on-course indication of the deviation indicator represents the bearing toward or away from an omni range.

VOLUME. Specially designed high-impedance voltmeter calibrated to indicate speech energy levels in volume units.

INDICATOR GATE.

Rectangular voltage waveform which is applied to the grid or cathode circuit of an indicator cathode-ray tube so as to sensitize or desensitize it during the desired portion of the operating cycle.

INDICATOR LIGHT.

Device designed to be used on board an aircraft to illuminate or irradiate an instrument or instruments.

INDIRECT PIEZOELECTRICITY.

Piezoelectric effect in which a mechanical strain is produced in a crystal by an applied voltage. (Reference: ELECTROSTRICTION.)

INDIRECT WAVE.

Wave reaching a given reception point by a path from the transmitting point other than the direct line path between the two. Example: A sky wave received after reflection from the ionosphere layers.

INDIRECTLY HEATED CATHODE.

Cathode which is brought to the temperature necessary for electron emission by a separated heater element.

INDIVIDUAL EQUIPMENT.

In Army and Air Force usage, referring to method of use, signifies personal clothing and equipment for the personal use of a soldier or airman.

INDIVIDUAL LINE.

Subscriber line arranged to serve only one main station although additional stations may be connected to the line as extensions. An individual line is not arranged for discriminatory ringing with respect to the stations on that line.

INDIVIDUAL SOUND ARTICULATION.

Articulation analyzed to show the percentage correctly recognized for a particular sound such as e.

INDOOR.

1. Not suitable for exposure to the weather.
2. Out of the weather.

INDOOR ANTENNA.

Receiving antenna located entirely inside a building but outside the radio receiver. It may be a wire strung in an attic, between walls, around the walls, under a rug, etc.

INDOOR TRANSFORMER.

Transformer which, because of its construction, must be protected from the weather.

INDUCED.

Produced as a result of exposure to the influence or variation of an electric or magnetic field.

INDUCED CHARGE.

Electrostatic charge produced on an object by the electric field that surrounds a near-by object.

INDUCED CURRENT.

Current due to an induced voltage.

INDUCED VOLTAGE.

Voltage produced in a circuit by a change in the number of magnetic lines of force passing through a coil in the circuit.

INDUCTANCE.

Property of a circuit which tends to oppose a change in the existing current and is present only when the current is changing.

INDUCTANCE BRIDGE.

Instrument similar to a Wheatstone bridge, used to measure an unknown inductance by comparing it with a known inductance.

INDUCTANCE DISTRIBUTED.

Inductance which exists along the entire length of a conductor, as distinguished from the self-inductance concentrated in a coil.

INDUCTANCE-TUBE MODULATION.

Method of modulation employed in frequency-modulated transmitters, in which an oscillator control tube acts as a variable inductance in parallel with the tank circuit of the radio-frequency oscillator tube, causing the oscillator frequency to vary in proportion to the audio-frequency voltage applied to the grid of the oscillator control tube.

INDUCTION.

1. Phenomenon whereby a body is electrified, magnetized, or given an induced voltage or current by exposure to a field of force.
2. In telephony, a condition where, due to magnetic coupling, a change in current in one circuit causes an equivalent change in an adjacent circuit.

NOISE. Audible disturbance in a circuit due to electric coupling with another.

POWER. Noise interference directly traceable to commercial power line.

RINGING. 1. Noise interference directly traceable to a source of ringing supply.

2. Small portion of the ringing current which is returned to the calling subscriber as an indication that the called party is being rung.

INDUCTION BRAZING.

Electric brazing process in which the heat is obtained from induced current.

INDUCTION COIL.

1. Transformer used in a telephone set for interconnecting the transmitter, receiver, and line terminals.
2. Transformer for converting interrupted direct current into high voltage alternating current.
3. Coil in which a voltage is established by the electromagnetic field of another coil through which alternating current is flowing.

INDUCTION COMPASS.

Compass whose indications depend on the current generated in a coil revolving in the magnetic field of the earth.

INDUCTION FIELD.

That portion of the electromagnetic field of a transmitting antenna which acts as if it were permanently associated with the antenna. The field near an antenna into which energy is alternately stored and removed. Energy of this type is not permanently lost to the antenna. (The radiation field leaves the transmitting antenna and travels through space as radio waves.)

INDUCTION FREQUENCY CONVERTER.

Slip-ring induction machine, which is driven by an external source of mechanical power and whose primary circuits are connected to a source of electric energy having a fixed frequency. The secondary circuits deliver energy at a frequency proportional to the relative speed of the primary magnetic field and the secondary member.

INDUCTION FURNACE.

Transformer of electric energy to heat by electromagnetic induction.

INDUCTION HEATING.

Process of transferring the energy in an alternating magnetic field into a metal by induction and there converting it into heat.

INDUCTION INSTRUMENT.

Meter that depends for its operation on the reaction between magnetic flux set up by current

in fixed windings, and other currents set up by electromagnetic induction in conducting parts of the moving system.

INDUCTION LOUDSPEAKER.

Moving conductor loudspeaker in which the moving conductor is in the form of a coil inductively coupled to the source of electrical energy.

INDUCTION MOTOR.

Alternating-current motor that converts electrical energy into mechanical energy. The rotor rotates due to the reaction between the magnetic fields of the connected primary and the field of the induced voltage in the shorted secondary. Either the rotor or the stator can have the external connections.

INDUCTION NOISE.

Audible disturbance in a circuit due to electric coupling with another. When a disturbance can be classified as thump, flutter, crossfire, or crosstalk, it is not considered noise.

INDUCTION POWER.

Noise interference traced directly to commercial power lines.

INDUCTION RESISTANCE WELDING.

Welding process in which the heating current is caused to flow in the parts to be welded by electromagnetic induction, without any electric contact between the source and the work.

INDUCTION SPEAKER.

(Reference: INDUCTION LOUDSPEAKER.)

INDUCTIVE.

Pertaining to inductance, to the inducing of a voltage through mutual inductance, or to the inducing of an electrical charge by electrostatic induction.

INDUCTIVE CIRCUIT.

Circuit containing a higher value of inductive reactance than capacitive reactance.

INDUCTIVE COORDINATION.

Location, design construction, operation, and maintenance of electric supply and communication systems in conformity with harmoniously adjusted methods which will prevent inductive interference.

INDUCTIVE COUPLING.

Association of one circuit with another by means of inductance common or mutual to both. This term, when used without modifying words, is commonly used for coupling by means of mutual inductance, whereas coupling by means of self-inductance common to both circuits is called direct inductive coupling.

INDUCTIVE FEEDBACK.

1. Transfer of energy from the plate circuit to the grid circuit of a vacuum tube by means of induction.
2. Transfer of energy from the output circuit to the input circuit of an amplifying device through an inductor, or by means of inductive coupling.

INDUCTIVE INTERFERENCE.

Effect arising from the characteristics and inductive relations of electric supply and communication systems of such character and magnitude as would prevent the communication circuits from rendering service satisfactorily and economically if methods of inductive coordination were not applied.

INDUCTIVE KICK.

Refers to the fact that when the current through an inductor is broken abruptly, the collapse of the magnetic field through the windings of the coil may generate across the coil a voltage many times higher than the impressed voltage.

INDUCTIVE LOAD.

Load that is predominately inductive, so that the load current lags behind the load voltage. (Reference: LAGGING LOAD.)

INDUCTIVE NEUTRALIZATION.

Neutralizing an amplifier whereby the feedback susceptance due to an interelement capacitance is canceled by the equal and opposite susceptance of an inductor.

INDUCTIVE REACTANCE.

1. Reactance which is caused by the inductance of a circuit. It is expressed in ohms and is equal to 2π times the product of the frequency in cycles per second and the inductance in henrys.
2. Opposition to the flow of alternating or pulsating current due to the inductance of a circuit.

It is measured in ohms, and its symbol is X_L .

INDUCTOR.

1. Device for introducing inductance into an electric circuit.
2. Coil having inductance.

INDUSTRIAL MOBILIZATION.

Transformation of industry from its peacetime activity to the fulfillment of the munitions program necessary to support the national military objectives. It includes the mobilization of materials, labor, capital, productive facilities, and contributory items and services essential to the munitions program.

INDUSTRIAL TELEVISION.

Application of television principles for remote viewing of processes or operations; usually over cables, as contrasted with broadcasting to the public.

INERT GAS.

One of a group of chemically inert gases, including Helium, Neon, Argon, Krypton, and Xenon. (Reference: NOBLE GAS, RARE GAS.)

INERTIA.

1. Tendency for matter to remain at rest, or if moving, to keep moving in the same direction.
2. Dynamic opposition to acceleration.

INERTIAL GUIDANCE.

Onboard guidance system for missiles and satellite vehicles where gyros, accelerometers, and possibly a gyro-stabilized platform, satisfy guidance requirements without use of any ground-located components. This system is jam-proof and entirely automatic, following a predetermined trajectory.

INF (INFANTRY).**INFINITE.**

Having no limits of magnitude.

INFINITE LINE.

Transmission line having characteristics corresponding to those which would be obtained with an ordinary line that is infinitely long.

INFINITESIMAL.

Extremely small, approaching zero as a limit.

INFLUENCE.

Tendency of a power system to cause noise or low frequency induction in a telephone system. Influence is determined by (1) power voltage, (2) power system balance, (3) harmonic content of the power voltage and current waves, and (4) power circuit transpositions.

INFORMATION.

Materials of every description which are used in the production of intelligence. It includes facts, observations, reports, rumors, photographs, documents, etc.

INFORMATION ADDRESSEE.

Activity or individual to whom a message is directed by the originator for information.

INFRARED.

Pertaining to or designating those rays of light just beyond the red end of the visible spectrum, such as are emitted by a hot body. They are visible and are detected by their thermal and photographic effects. Their wave lengths are longer than those of visible light and shorter than those of radio waves.

INFRARED COUNTER-COUNTERMEASURES.

Actions taken to effectively employ our own infrared radiation equipments and systems in spite of the enemy's actions to counter their use.

INFRARED COUNTERMEASURES.

Actions taken to prevent or reduce the effectiveness of enemy equipment and tactics employing infrared radiation is termed infrared countermeasures.

INFRARED WAVES.

Visible waves longer than the longest visible red light waves, and shorter than radio-frequency waves. (Reference: BLACK LIGHT.)

INFRASONIC FREQUENCY.

Frequency lying below the audio-frequency range.

INFRASTRUCTURE.

Static items of capital expenditure which are

required provide the materiel backing for operational plans necessary to enable the higher command to function and the various forces to operate with efficiency.

Note. In short, infrastructure is military construction—public works to support operational plans.

INHERENT DELAY.

Delay between the insertion of information into a unit and presentation of the information at the output. Delay is usually inserted in the CRT vertical amplifier of pulse analyzers to allow the leading edge of the signal triggering the sweep to be seen.

INHIBITING INPUT.

Gate input which, if in its prescribed state, prevents any output which might otherwise occur.

INITIAL APPROACH.

That part of an instrument approach procedure consisting of the first approach to the first navigational facility associated with the procedure.

INITIAL INSTALLATION.

Notation appearing on an issue document indicating that items of Air Force property or Armed purchased nonexpendable supplies or Air Force expendable recoverable supplies listed thereon have been, or are to be installed or used in repair of an aircraft, vehicle, or major assembly to make it complete.

INITIAL PICKUP.

Radar data not correlated with a track, passed by the IAD and not within 5 miles of a tentative track or another initial pickup.

INITIATING.

Causing an action to start. A qualifying term applied to a device whose operation must precede that of other devices involved in an operating sequence. Thus, an initiating relay may set off a sequence of operations in other relays.

INITIATION.

Process by which an operator or a computer associates speed and heading with radar or Mark X data to form a track.

INITIATION AREA DISCRIMINATOR.

Cathode-ray tube and photoelectric-cell combination. The photoelectric-cell picks up unmapped, uncorrelated long-range data for processing by the automatic-initiation program of the computer.

INITIATION SUPERVISOR.

Noncommissioned officer responsible to the Air Surveillance Officer for the operation of manual initiation and the monitoring of automatic initiation.

INJECTION GRID.

Grid introduced into a vacuum tube in such a way that it exercises control over the electron stream without causing interaction between the screen grid and control grid. The injection grid is used as a means of introducing the oscillator signal into the mixer stage in some superheterodyne receivers.

INK MIST RECORDING.

In facsimile, that type of electro-mechanical recording in which particles of an ink mist are deposited directly upon the record sheet. (Reference: INK VAPOR RECORDING.)

INK RECORDER.

Ink-filled pen or capillary tube to produce the graphic record.

INK RECORDING.

Type of mechanical facsimile recording which employs helical scanning, using an inked helix which marks the record sheet.

INK VAPOR RECORDING.

In facsimile, that type of electro-mechanical recording in which particles of an ink mist are deposited directly upon the record sheet. (Reference: INK MIST RECORDING.)

INPUT.

1. Current, voltage, power, or driving force applied to a circuit or device.
2. Terminals or other places where current, voltage, power, or driving force may be applied to a circuit or device.

INPUT ADMITTANCE.

Reciprocal of input impedance.

INPUT CAPACITANCE.

Sum of the direct capacitances between the control grid and the cathode and such other electrodes that are operated at the alternating potential of the cathode.

Note. This is not the effective capacitance, which is a function of the impedances of the associated circuits.

INPUT EQUIPMENT.

Equipment used to introduce data into a computer.

INPUT IMPEDANCE.

Impedance presented by a device to the source.

INPUT RESONATOR.

Buncher resonator in a velocity-modulated tube which modifies the velocity of the electrons in the beam.

INPUT TRANSFORMER.

Used to transfer energy from an alternating-voltage source to the input of a circuit or device. Its function is usually to provide a correct impedance match.

INS (INSPECTOR, INSPECTION, INSULATE).**INSACS (INTERSTATE AIRWAYS COMMUNICATIONS STATION).**

Interstate airways stations operated by CAA. Such stations are usually manned by five to ten Airways Operations Specialists. They normally control a L/MF radio range, a VOR, or both, making scheduled weather broadcasts by voice on the range frequency. They also provide voice air/ground communications and flight assistance service. Each station in a control area is connected to one or more Service F interphone circuits for direct telephone communications with the ARTC Centers; and one or more Service F interphone circuits for direct telephone communications with the ARTC Centers; and one or more Service B teletypewriter circuits for handling message traffic with other CAA facilities and offices. In outlying areas where no landline exist, radiotelegraph or radioteletype circuits are used. In Alaska, a system of VHF radio-teletypewriter/interphone circuits provides the base communications network.

INSERTION GAIN.

Insertion gain, resulting from the insertion of a transducer in a transmission system, is the ratio of the power delivered to that part of the system following the transducer to the power delivered to that same part before insertion. This ratio is usually expressed in decibels.

INSERTION LOSS.

1. Resulting from the insertion of a transducer in a transmission system, the ratio of the power delivered before the insertion to that part of the system following the transducer to the power delivered to that same part after the insertion. This ratio is usually expressed in decibels.

2. Insertion loss of a piece of equipment or a line section is the added loss introduced when that equipment or section is interposed between two elements of a circuit. The qualification of INSERTION is employed because the new circuit element may not match the former circuit elements in impedance; the apparent loss added to the circuit may not be the same as the loss of the new element when measured between its own designed impedances.

INSERTION PHASE SHIFT.

Of an electric structure, the change in phase caused by the insertion of the structure in a transmission system. The usual convention is that shunt capacitance or series inductance produces a positive phase shift.

INSIDE PLANT.

In telephone practice, that part of the plant within a central office, intermediate station, or subscriber's premises which is on the office or station side of the point of connection with the outside plant.

INSIDE SPIDER.

Flexible device placed inside a voice coil to center it accurately with respect to the pole pieces of a dynamic loudspeaker.

INSP (INSPECTION).

Examination of Air Force personnel, organizations, activities, or installations to determine their effectiveness and economy of operation, adequacy of facilities, readiness to perform

assigned missions, or compliance with directives; the examination of materiel to determine quality, quantity, or compliance with standards.

INSPECTOSCOPE.

Instrument for viewing quartz crystals while immersed in oil to locate the various mechanical faults, to determine the approximate direction of the optical axis, and to reveal regions of optical twinning.

INST (INSTRUCTOR, INSTRUMENT, INSTALLATION).

INSTALLATION.

Military facility in a fixed or relatively fixed location together with its buildings, building equipment, and subsidiary facilities such as piers, spurs, access roads, and beacons.

INSTALLATION CHARGE.

Non-recurring charge which applies to certain items of installed equipment, and which covers all or part of the cost of installation. These charges may be specific tariff charges, such as are applied to installations and moves of telephones, or they may be computed to meet specific situations.

INSTALLATION-ENGINEERING.

Preparation of engineering data and the computation of materiel required for the installation of a facility.

INSTALLED EQUIPMENT.

Nonexpendable equipment permanently attached or integrated to real property in such a manner that it cannot be removed without causing substantial physical damage or change to the real property.

INSTALLING AGENCY.

Agency manned and equipped to install C-E facilities.

INSTANTANEOUS.

Qualifying term indicating that no delay is purposely introduced in the action of the device.

INSTANTANEOUS AUTOMATIC VOLUME CONTROL.

Radar receiver circuit which uses the echo amplitude of each returning signal to vary the receiver gain. The action of the circuit is delayed for a time approximately equal to the pulse duration so that echoes from isolated targets are not affected. However, if sufficiently strong signals are received continuously for a period longer than the pulse duration, the receiver gain is decreased, but it returns to normal shortly after the end of the longer signal.

INSTANTANEOUS DISK.

Blank disk that, immediately after being cut on a sound recorder, can be played back on a phonograph.

INSTANTANEOUS POWER.

Power at the points of entry of an electric circuit into a region is the rate at which electric energy is being transmitted by the circuit into the region.

INSTANTANEOUS RECORDING.

Recording that may be used immediately after cutting or embossing, without further processing.

INSTANTANEOUS SAMPLING.

Process for obtaining a sequence of instantaneous values of a wave.

INSTANTANEOUS SOUND PRESSURE.

Pressure at a point in a medium containing sound waves, minus the static pressure that exists when no sound waves are present. The unit is the dyne per square centimeter.

INSTANTANEOUS SPEECH POWER.

Rate at which sound energy is being radiated by the speaker at any given instant.

INSTANTANEOUS VALUE.

Magnitude at any particular instant of a value that is continually varying with respect to time.

INSTLR (INSTALLER).**INSTR (INSTRUCTOR).**

Person who teaches some special subject, such as flying or gunnery.

INSTRUCTION.

Command plus one or more addresses which, as a unit, causes the directed computer operation to be performed on the indicated quantities. (Reference: INSTRUCTION CODE.)

INSTRUCTION CODE.

Artificial language for describing or expressing the instructions which can be carried out by a digital computer. In automatically sequenced computers, the instruction code is used when describing or expressing sequences of instructions, and each instruction word usually contains a part specifying the operation to be performed and one or more addresses which identify a particular location in storage. Sometimes an address part of an instruction is not intended to specify a location in storage but is used for some other purpose. If more than one address is used, the code is called a multiple-address code. In a typical instruction of a four-address code the addresses specify the location of two operands, the destination of the result, and the location of the next instruction in the sequence. In a typical three-address code, the fourth address, specifying the location of the next instruction, is dispensed with and the instructions are taken from storage in a preassigned order. In a typical ONE-address or single-address code, the address may specify either the location of an operand to be taken from storage, the destination of a previously prepared result, or the location of the next instruction. The arithmetic element usually contains at least two storage locations, one of which is an accumulator. For example, operations requiring two operands may obtain one operand from the main storage and the other from a storage location in the arithmetic element which is specified by the operation part.

INSTRUMENT.

Device for measuring the present value of the quantity under observation. An instrument may be an indicating instrument or a recording instrument. (Reference: METER.)

INSTRUMENT APPROACH.

Process of making an approach to a landing by

the use of navigation instruments, without direct visual reference to the terrain.

INSTRUMENT APPROACH PROCEDURE.

Series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT.

Flight in which the flight path and latitude of the aircraft are controlled solely by reference to instruments.

INSTRUMENT FLIGHT RULES.

Directives which govern flight procedures under conditions requiring the pilot to fly other than by visual flight rules.

INSTRUMENT LAMP.

Device designed to be used on board an aircraft to illuminate or irradiate an instrument or instruments.

INSTRUMENT LANDING STATION.

Special radio station for facilitating the landing of aircraft.

INSTRUMENT LANDING SYSTEM.

System of radio navigation, intended to assist aircraft in landing, which provides lateral and vertical guidance, including indications of distance from the optimum point of landing. Note. The term ILS has been generally accepted to designate the specific system of electronic aid to approach comprising: 1. A localizer operating within the radio-frequency band 108-112 mc; 2. A Glide Slope Facility operating within the radio-frequency band 328.6-335.4 mc.; 3. ILS Markers operating on the radio-frequency of 75 mc.

INSTRUMENT MULTIPLIER.

Particular type of series resistor which is used to extend the voltage range of an instrument beyond some particular value for which the instrument is already complete.

INSTRUMENT SHUNT.

Particular type of resistor connected in parallel with the measuring device to extend the current range beyond some particular value for which the instrument is already complete.

INSTRUMENT SWITCH.

Used to disconnect an instrument or to transfer it from one circuit or phase to another.

INSTRUMENT TRANSFORMER.

Transformer in which the conditions of current or voltage and of phase position in the primary circuit are represented with acceptable accuracy in the secondary circuit. Instrument transformers are classified according to their accuracy under specified conditions. An instrument transformer may be either an instrument current transformer or an instrument potential (voltage) transformer.

INSULATED.

Separated from other conducting surface by a dielectric permanently offering a high resistance to the passage of current and to disruptive discharge.

Note. When any object is said to be insulated, it is understood to be insulated in a suitable manner for the conditions to which it is subjected.

INSULATED CARBON RESISTOR.

Resistor encased in a fiber, plastic, or other insulating housing.

INSULATED CLIP.

Clip terminating in an insulated eye through which flexible cords or wires may be run and supported.

INSULATED HOOK.

Hook terminating in an insulated eye through which flexible cords or wires may be run or supported.

INSULATED SCREW EYE.

Screw terminating in an insulated eye through which flexible cords or wires may be run and supported.

INSULATED SERIES-EXCITED VERTICAL RADIATOR.

Vertical transmitting antenna that is insulated from the earth, with its exciting voltage induced in a coil connected between the antenna and the ground.

INSULATED TURNBUCKLE.

Turnbuckle so constructed as to constitute an insulator as well as a turnbuckle.

INSULATED WIRE.

Conductor covered with a nonconducting material.

INSULATING.

(Where applied to the covering of a conductor, or to clothing, guards, rods, other safety devices.) Device, when interposed between a person and current-carrying parts, protects the person against electric shock from the current carrying parts with which the device is intended to be used; the opposite of conducting.

INSULATING JOINT.

Coupling or joint used to insulate electrically adjacent pieces of conduit, pipes, rods, lighting fixtures, etc., from each other while mechanically connecting them.

INSULATING STRENGTH.

Measure of the ability of an insulating material to withstand electric stress without breakdown. It is defined as the voltage per unit thickness necessary to initiate a disruptive discharge. Usually measured in volts per centimeter. (Reference: ELECTRIC STRENGTH, DIELECTRIC STRENGTH.)

INSULATING TAPE.

Tape impregnated with insulating material, usually adhesive, used to cover joints in insulated wires or cables.

INSULATING VARNISH.

Varnish having good insulating qualities, applied to coils and windings to improve their insulating and at times to improve mechanical rigidity.

INSULATING WAX.

1. Acid-free, animal wax of a dull yellow color.
2. Ceresine; a prepared wax having much greater dielectric strength and resistivity than either beeswax or paraffin, also having a very low loss at radio frequencies.
3. Paraffin; a wax that is not reactive with acid or other materials that attack and break down other insulating materials.

INSULATION.

1. Non-conducting material used to prevent the leakage of electricity from a conductor; to provide mechanical spacing or support to protect against accidental contact.
2. Use of material in which current flow is negligible to surround or separate a conductor to prevent loss of current.

LOW. Condition where normal insulation is not fully effective and there is a loss of current.

INSULATION OF CABLE.

That part which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

INSULATION RESISTANCE.

Electric resistance between two conductors separated by an insulating material.

INSULATION RESISTANCE OF INSULATED CONDUCTOR.

Resistance offered by its insulation to an impressed direct voltage tending to produce a leakage of current through the same.

INSULATOR.

1. Material of such low conductivity that the flow of current through it can usually be neglected.
2. Device, having high electric resistance, used for supporting or separating conductors so as to prevent undesired flow of current from the conductors to other objects.

STRAIN. Porcelain appliance used to couple two sections of a guy mechanically, but to separate them electrically.

INSULATOR ARC-OVER.

Discharge of power current in the form of an arc following a surface discharge over an insulator.

INSULATOR ARCING HORN.

Metal part placed at one or both ends of an insulator or of a string of insulators for the purpose of reducing or eliminating damage to the insulator and/or conductor by arc-over.

INSULATOR ARCING RING.

Metal part, usually circular or oval, placed at one or both ends of an insulator or of a string of insulators for the purpose of reducing or eliminating damage to the insulator and/or conductor by arc-over.

INSULATOR GRADING SHIELD.

Arcing ring so shaped and located as to improve the voltage distribution across or along the insulator or insulator string.

INSULATOR STRING.

Two or more suspension insulators connected in series.

INSURV.

Board of inspection of survey.

INT (INTERCEPT TECHNICIAN).

Airman who assists the intercept director in the SAGE center.

INTCP (INTERCEPT, INTERCEPTOR, INTERCEPTION).

INTEGRATED COMMUNICATIONS SYSTEM.

Communications system on either a unilateral or joint basis, in which a message can be filed at any communication center in that system and be delivered to the addressee(s) by any other appropriate communication center in that system without reprocessing en route. Such a system requires uniformity of procedures, through linking between the various communications systems operated by several services, and established arrangements for necessary relay.

INTEGRATED DATA PROCESSING.

Way to transform disjointed and repetitive paper-

work tasks into a correlated and mechanized production of information for all purposes.

INTEGRATED-DEMAND METER.

Indicates or records the integrated load taken by an electrical installation.

INTEGRATING CIRCUIT.

Circuit whose output voltage is approximately proportional to the time integral of the input voltage.

INTEGRATING METER.

Adds up or integrates the electrical energy used over a period of time, such as an ordinary electric meter.

INTEGRATING PHOTOMETER.

Photometer in which the average candle power from a source in all directions or at all angles in a single plane is determined by a single reading.

INTEGRATING-SPHERE DENSITOMETER.

Photoelectric instrument used to measure the density of sound tracks on motion picture film or to measure film density itself.

INTEGRATOR.

1. Transducer whose output wave form is substantially the time integral of its input wave form. Such a transducer preceding a phase modulator makes the combination a frequency modulator; or following a frequency detector, makes the combination a phase detector. Its ratio of output amplitude to input amplitude is inversely proportional to frequency, and its output phase lags its input phase by 90 degrees.

2. (Electronic Computer). Device whose output is proportional to the integral of an input signal. In certain digital machines, a device for numerically accomplishing an approximation to the mathematical process of integration.

INTEL (INTELLIGENCE).

1. Knowledge or information which has been evaluated and interpreted in terms of the capabilities, limitations, vulnerabilities, and probable intentions of the enemy or potential enemy.

2. Organization or activity that evaluates and interprets information.

3. Process by which such information is collected, evaluated, interpreted, and disseminated.
4. Information conveyed by a communication medium, or by a modulated radio wave.

INTELLIGENCE ESTIMATE.

Appraisal of the element of intelligence relating to a specific situation or condition with a view to determining the courses of action open to the enemy and, when appropriate, the sequence in which they may be adopted.

INTELLIGENCE SIGNAL.

Signal that conveys information.

INTENSIFIER ELECTRODE.

Electrode provided in some types of electrostatic cathode-ray tubes which permits additional acceleration of the electron beam after it has been deflected. The advantage of this extra electrode is that it permits greater intensity of the trace without materially reducing the deflection sensitivity of the tube. (Reference: POST-ACCELERATING ELECTRODE, POST-DEFLECTION ACCELERATING ELECTRODE.)

INTENSIFYING SCREEN.

Fluorescent screen placed in close contact with a photographic plate.

INTENSIMETER.

Instrument used to estimate the quantity of X-ray radiation for the purpose of determining the duration of exposure when using X-rays for therapy. (Reference: DOSAGE METER, DOSIMETER.)

INTENSITY.

1. Strength or amplitude of a quantity.
2. Relative strength of electric, magnetic, or vibrational energy.
3. To increase the brilliance of an image on the screen of a cathode-ray tube.

INTENSITY CONTROL.

Control, associated with cathode-ray tubes, by which the intensity of the electron beam and hence, the amount of light generated by the fluorescent screen is controlled. Generally the control adjusts the grid bias of the tube. (Reference: BRILLIANCE CONTROL.)

INTENSITY LEVEL.

Ratio of the intensity of the sound to a reference intensity usually fixed at a sound flux density of 10^{-9} ergs per second per square centimeter under normal conditions. Intensity level is commonly expressed in decibels.

INTENSITY MODULATION.

1. Technique of applying a signal to the grid of a cathode-ray tube, so that the brightness of various portions of the pattern will be varied accordingly.
2. Control of the brilliance of the trace on a cathode-ray screen in accordance with the magnitude of a signal.

INTENSITY OF X-RAYS.

Quality of a beam of X-rays which determines the rate of ionization of air at a given point under specified conditions. Intensity is expressed in Roentgens per unit of time.

INTER.

Between, and only between, two or more wings, areas, or services, etc.

INTER-CHARACTER SPACE.

That space, equal to three unit lengths, between characters of a word. Term used in telegraphy.

INTERCARRIER NOISE SUPPRESSION.

Means of suppressing the noise resulting from increased gain when a high-gain receiver with automatic volume control is tuned between stations. The suppression circuit automatically blocks the audio-frequency input of the receiver when no signal exists at the second detector. (Reference: INTERSTATION NOISE SUPPRESSION.)

INTERCARRIER SOUND SYSTEM.

Television receiving system in which use of the picture carrier and the associated sound channel carrier produces an intermediate frequency equal to the difference between the two carrier frequencies. This intermediate frequency is frequency-modulated in accordance with the sound signal.

INTERCEPT.

1. Distance from the origin to the point where

a line, curve, or surface cuts a particular axis on a graph.

2. To cut off or bound some part of a line or other geometric figure.

INTERCEPT DIRECTION.

Function of the computer program which provides vector instructions to friendly airborne objects on various types of air-defense missions.

INTERCEPT DIRECTOR.

Officer in the Direction Center Weapons Branch responsible for monitor and control of interceptors.

INTERCEPT METHOD.

Method in which one transmitting station sends to a second station, the latter obtaining necessary repetitions to ensure correct reception, and repeating back, if so directed by the first station, or if so prescribed. The messages thus transmitted are addressed to other stations who are required to copy the transmission, but are not permitted to receipt for messages thus received, or to use their transmitters for any other purpose directly in connection with these transmissions.

INTERCEPT POINT.

Point in space towards which an interceptor is vectored to complete an interception.

INTERCEPT RECEIVER.

A special calibrated receiver which can be tuned over a wide frequency range in order to detect and measure rf signals transmitted by the enemy. (Reference: SEARCH RECEIVER.)

INTERCEPT SERVICE.

Service provided subscribers whereby calls to disconnected stations or dead lines are either routed to an intercept operator for explanation, or receive a distinctive tone that tells the calling party that he has made such a call.

INTERCEPT TACTICS.

One of several courses of action which may be selected by an Intercept Director to conduct an interception.

Cut Off: An interceptor is vectored on a straight path to the intercept point without regard to attack angle.

One Scan Lead Pursuit: An interceptor is continuously vectored toward a point in space approximately 15 seconds in front of a target's position.

Final Turn: An interceptor is vectored to an offset point from which the final turn is made to the attack heading.

INTERCEPT TECHNICIAN.

Airman who assists the Intercept Director.

INTERCEPTING.

1. Routing of a call placed to a disconnected or nonexisting telephone number, to an operator or to a machine answering device.
2. Air defense term to describe a mission to meet and identify an unknown airborne object or to engage a known hostile airborne object.

MECHANICAL. Answering an intercepted call mechanically, as with a message recorded on a magnetic tape or belt.

OPERATOR. Answering an intercepted call by an operator who asks, "What number did you call, please?" and then give instructions on completing the call.

INTERCEPTING TRUNK.

Trunk to which a call for a vacant number or changed number or a line out of order is connected for action by an operator.

INTERCEPTION.

1. Act of listening in on and/or recording communications intended for another party for the purpose of obtaining intelligence.
2. Radar countermeasures method in which radar signals are detected by means of special receiver and associated equipment.

INTERCEPTION ALTITUDE.

Used with guided missiles. It is the lowest altitude at which the defense dares try to kill the missile with his counter rocket.

INTERCEPTOR.

Airborne object designed or used for interception.

INTERCEPTOR MISSILE.

Surface-to-air guided missile employed in the Air Force air defense mission. Interceptor missiles will be designated with the prefix IM followed by a numerical designator.

INTERCOM.

Telephone apparatus by means of which personnel can talk to each other within an aircraft, tank, ship, or activity.

INTERCOMMUNICATION SYSTEM.

Audio-frequency amplifier system that provides two-way voice communication between two or more locations.

INTERCONTINENTAL BALLISTIC MISSILE.

Missile or rocket capable of a 5,000-mile range.

INTERDEPARTMENT RADIO ADVISORY COMMITTEE.

National committee formed to coordinate the needs of both Government and non-Government agencies for frequency-spectrum space, and to formulate policies in connection with the use of radio frequencies by the Government.

INTERDICT.

To prevent or hinder enemy use of an area or route.

INTERELECTRODE CAPACITANCE.

Capacitance existing between certain electrodes of an electron tube.

INTERELECTRODE TRANSMIT TIME.

Time required for an electron to traverse the distance between two electrodes.

INTERFERENCE.

1. Electrical disturbance which causes undesirable responses in electronic equipment.
2. Disturbance in radio reception caused by undesired signals, stray currents from electrical apparatus, etc. A current from a foreign source or a second communication line which in some way produces derogatory performance. Interference is sometimes spoken of as the current or power which causes noise in the telephone.
3. In a signal transmission system, either extraneous power which tends to interfere with the

reception of the desired signals, or the disturbance of signals which results.

ADJACENT-CHANNEL. Interference caused in one communication channel by a transmitter operating in the same channel.

ELECTRICAL. Interference caused by the operation of electrical apparatus which is not designed to radiate energy.

HARMFUL. Radiation of any induction which endangers the functioning of a radio navigation service or of a safety service. Obstructions or repeated interruptions of a radio service operating in accordance with international radio regulations.

SECOND-CHANNEL. Interference caused in one communication channel by a transmitter operating in a channel next beyond an adjacent channel.

SELECTIVE. Interference which encompasses a narrow band of frequencies.

WAVE. Phenomenon which results when waves of the same or nearly the same type and frequency are super-imposed; characterized by a spatial or temporal distribution of amplitude of some specified characteristic differing from that of the individual superimposed waves.

INTERFERENCE ELIMINATOR.

1. Device designed for the purpose of eliminating or reducing interference.
2. Wave trap used to reduce the effects of interference produced by an undesired radio station.

INTERFERENCE FADING.

Produced by the fact that different wave components travel slightly different paths in arriving at the receiver.

INTERFERENCE FILTER.

Device, generally containing some combination of capacitance and inductance, used between a source of man-made interference and a radio receiver to attenuate or eliminate noise signals.

INTERFERENCE GUARD BANDS.

Two bands of frequencies, additional to and on

either side of the communication band and frequency tolerance, which may be provided in order that there shall be no interference between stations having adjacent frequency assignments.

INTERFERENCE PATTERN.

1. Resulting space distribution of pressure, particle velocity, energy density, or energy flux when progressive waves of the same frequency and kind are superimposed.
2. Pattern produced on a radar scope by interference signals.

INTERFERENCE SPECTRUM.

Frequency distribution of the jamming interference in the propagation medium external to the receiver.

INTERFEROMETER.

Apparatus used to produce and show interference between two or more wave trains coming from the same large luminous area, and also to compare wave lengths with observable displacements of reflectors or other parts.

INTERGALACTIC SPACE.

Area in space between galaxies.

INTERIOR COMMUNICATION.

Rapid communication facilities, electrical, acoustical, or mechanical, that interconnect the various operational spaces of a naval vessel, aircraft, or other activity.

INTERIOR WIRING SYSTEM GROUND.

Ground connection to one of the current-carrying conductors of an interior wiring system.

INTERLACED FIELD.

(Reference: INTERLACED SCANNING.)

INTERLACED SCANNING.

In television, scanning process in which the distance from center-to-center of successively scanned lines is two or more times the nominal line width, and in which the adjacent lines belong to successive fields.

INTERLACING.

Method of scanning used in television, in which each picture is divided into two or more complete sets of interlacing lines to reduce flicker.

INTERLOCK.

Safety switch which de-energizes high voltage when doors, access covers, or other openings are opened.

INTERLOCK CIRCUIT.

Circuit in which one action cannot occur until one or more other actions have first taken place. The interlocking action is generally obtained with relays.

INTERLOCKING.

Automatic interlocking is an arrangement of signals at railroad grade crossings which function through the exercise of inherent power as distinguished from those whose functions are controlled manually.

INTERLOCKING PLANT.

Assemblage of switch, lock, and/or signal appliances interlocked.

INTERLOCKING RELAY.

Relay having two sets of coils with their armatures so arranged that with either set of coils de-energized, it prevents the other armature from closing or opening a circuit through its contacts.

INTERMEDIATE APPROACH.

Instrument approach procedure from the first arrival at the first navigational facility or predetermined fix, to the beginning of the final approach.

INTERMEDIATE DISTRIBUTING FRAME.

Frame in a local central office, the primary purpose of which is to cross-connect the subscriber line multiple to the subscriber line circuit. In a private exchange, the intermediate distributing frame is for similar purposes.

INTERMEDIATE FRAME.

Distributing frame on which the subscriber line multiples appear on one side and the subscriber line circuit on the other for interconnection.

INTERMEDIATE FREQUENCY.

1. Fixed frequency to which all carrier waves are converted in a superheterodyne receiver.

2. Carrier frequency used in a stage of modulation intervening between the original signal and the final modulated carrier.

3. Frequency to which a signaling wave is shifted locally as an intermediate step in transmission or reception.

4. Frequency resulting from the combination of the received signal and that of the local oscillator in a superheterodyne receiver. (Reference: HETERODYNE.)

INTERMEDIATE HORIZON.

Screening object (hill, mountain, ridge, building etc.) similar to the radar horizon, but not the most distant. For example, a distant mountain range might comprise the radar horizon on a given azimuth while a closer, lower ridge might screen a valley between it and the mountain range; the ridge would be an intermediate horizon.

INTERMEDIATE SCALE MAP.

Map, normally of a scale from 1:200,000 to 1:500,000, intended for planning strategic operations, including the movement, concentration, and supply of troops.

INTERMEDIATE SUBCARRIER.

Carrier which may be modulated by one or more subcarriers and which is used as a modulating wave to modulate a carrier or another intermediate subcarrier.

INTERMEDIATE-FREQUENCY AMPLIFIER.

Section of a superheterodyne receiver which amplifies signals with high efficiency at a predetermined frequency, called the intermediate frequency of the receiver.

INTERMEDIATE-FREQUENCY RESPONSE RATIO.

In a heterodyne receiver, the ratio of the intermediate frequency signal input at the antenna to the desired signal input for identical outputs.

INTERMEDIATE-FREQUENCY STAGE.

Intermediate-frequency amplifier stage.

INTERMEDIATE-FREQUENCY TRANSFORMER.

1. Transformer which is designed for use in the intermediate-frequency amplifier of a superheterodyne receiver.

2. Transformer designed to respond most efficiently to a wave of a given intermediate frequency.

INTERMEDIATE-FREQUENCY TRANSFORMER LEAD COLOR CODE.

Leads of transformers in radio receivers are identified by the following standard RMA colors; plate lead-blue; B plus lead-red, grid or diode lead-green; grid return lead-black. For a full-wave transformer, the second diode lead will be green-black.

INTERMEDIATE-RANGE BALLISTIC MISSILE.

Tactical missile or rocket weapon with a range from 200 to 1,500 miles.

INTERMITTENT.

Occurring at intervals.

INTERMITTENT CURRENT.

Unidirectional current that is interrupted at regular or irregular intervals.

INTERMITTENT DEFECT.

Defect that depends on varying conditions in a circuit and hence is not continuously present.

INTERMITTENT DUTY.

Operation of a machine or apparatus for definitely specified alternate intervals of load and rest.

INTERMITTENT PULSING.

Transmission of short bursts of radiation at irregular intervals.

INTERMITTENT RATING.

Permissible output of a piece of apparatus when working for alternate periods of load and rest having a definite ratio to each other, or when running for a stated period that is insufficient to produce the final temperature.

INTERMITTENT RECEPTION.

Radio receiver complaint in which the receiver operates normally for a time, then becomes defective for a time, with the process repeating at regular or irregular intervals.

INTERMITTENT SCANNING.

One or two 360° scans of antenna beam at irregular intervals to increase difficulty of detection by intercept receivers.

INTERMITTENT SERVICE AREA.

Area receiving service from the ground wave of a broadcast station but beyond the primary service area and subject to some interference and fading.

INTERMODULATION.

Modulation of the components of a complex wave by each other, producing waves having frequencies equal to the sums and differences of integral multiples of the component frequencies of the complex wave.

INTERMODULATION DISTORTION.

1. Impairment of fidelity resulting from the production of frequencies that are the sum of, and the difference between, frequencies contained in the applied waveform.

2. Form of distortion which results from intermodulation.

INTERMODULATION INTERFERENCE.

Production of combination-frequency tones at the output by the nonlinearity of an amplifier or network when two or more sinusoidal voltages of specified amplitude are applied at the input. It is expressed as the ratio of the root-mean-square voltage of one or more of the combination frequencies to that of one of the parent frequencies, measured at the output.

INTERNAL HAZARD.

Dangerous physiological condition resulting from the ingestion of radioactive material, particularly alpha emitters.

INTERNAL RESISTANCE.

Resistance within the cell or battery to the flow of an electric current.

INTERNATIONAL AMPERE.

Current which will deposit silver at the rate of 0.00111800 gram per second.

INTERNATIONAL BOUNDARY AIR DEFENSE IDENTIFICATION ZONE.

Air defense identification zone adjacent to an international boundary line of the United States.

INTERNATIONAL BROADCAST STATION.

Licensed for the transmission of broadcast programs for international public reception. Frequencies are allocated from bands assigned (between 6,000 and 26,600 kc.) for broadcasting by international agreement.

INTERNATIONAL CALL SIGN.

Call sign assigned in accordance with the provisions of the International Telecommunications Union to identify a radio station. The nationality of the radio station is identified by the first or the first two characters.

INTERNATIONAL CIVIL AVIATION ORGANIZATION.

International organization established to provide standardized flight rules and regulations on a world-wide basis.

INTERNATIONAL COMMUNICATION SERVICE.

Telecommunication service between offices or stations belonging to different countries or between stations of mobile services, unless these are situated within the limits of the country to which they belong.

INTERNATIONAL COULOMB.

Quantity of electricity which passes any section of an electric circuit in one second, when the current in the circuit is one international ampere. One international coulomb equals 0.99985 absolute coulomb.

INTERNATIONAL FARAD.

Capacitance of a capacitor if a charge of one international coulomb produces a potential difference between the terminals of the international volt. One international farad equals 0.99952 absolute farad.

INTERNATIONAL FREQUENCY REGISTRATION BOARD.

Board, reporting to the International Telecommunications Union, which is responsible for

technically approving and recording all radio-frequency assignments, and for preparing the International Frequency List.

INTERNATIONAL GENERAL RADIO REGULATIONS.

General Radio Regulations of Cairo, 1938, annexed to the International Telecommunications Convention of Madrid, 1932.

INTERNATIONAL GEOPHYSICAL YEAR.

World-wide research program on the earth and its atmosphere.

INTERNATIONAL HENRY.

Inductance which produces an electro-motive force of one international volt when the current is changing at a rate of one international ampere per second, one international henry equals 1.00018 absolute henrys.

INTERNATIONAL JOULE.

Energy required to transfer one international coulomb between two points having a potential difference of one international volt. One international joule equals 1.00018 absolute joules.

INTERNATIONAL MORSE CODE.

System of dot and dash signals differing somewhat from the Morse code. The code universally used for radiotelegraphy. It is used for wire telegraphy in some European countries. (Reference: CONTINENTAL CODE.)

INTERNATIONAL OHM.

Resistance at zero degree centigrade of a column of mercury, of uniform cross section, having a length of 106.300 centimeters and a mass of 14.4521 grams. Experimental results show that one international ohm equals 1.00048 absolute ohms.

INTERNATIONAL RADIO CONSULTATIVE COMMITTEE.

International committee which operates in a manner similar to the CCIF, but on subjects pertaining to radio, television, and multi-channel radio transmission.

INTERNATIONAL RADIO SILENCE.

Three-minute periods of radio silence, on the frequency of 500 kilocycles only, commencing 15 and 45 minutes after each hour, during which

all radio stations may listen on that frequency for distress signals of ships and aircraft.

INTERNATIONAL RADIUM STANDARD.

Standard of radioactivity, consisting of 21.99 milligrams of pure radium chloride.

INTERNATIONAL SIGNAL CODE.

Code adopted by many nations for international communication. The code uses combinations of letters to stand for words, phrases and sentences. The letters are transmitted by the hoisting of international alphabet flags or by transmitting their dot and dash equivalents in the International Morse Code. (Reference: SIGNAL, INTERNATIONAL CODE.)

INTERNATIONAL SYSTEM OF ELECTRICAL AND MAGNETIC UNITS.

System for electrical and magnetic quantities which takes as the four fundamental quantities resistance, current, length, and time. The units of resistance and current are arbitrary values that approximately correspond to the absolute ohm and the absolute ampere; units of length and time are the centimeter and second.

INTERNATIONAL TELECOMMUNICATION SERVICE.

Telecommunication service between offices or stations of different States, or between mobile stations which are not in the same State, or are subject to different States.

INTERNATIONAL TELECOMMUNICATION UNION.

Civil international organization established to provide standardized communications procedures and practices including frequency allocation and radio regulations on a world-wide basis.

INTERNATIONAL TELEGRAPH CONSULTATIVE COMMITTEE.

International committee which operates in the same manner as the CCIF group but on matters pertaining to telegraph and facsimile.

INTERNATIONAL TELEPHONE CONSULTATIVE COMMITTEE.

International committee covering ordinary telephone, carrier telephone, music transmission, picture transmission, television transmission and

multi-channel telegraph transmission over wire lines. This committee has the responsibility of studying technical operating and tariff questions pertaining to the above types of transmission over wire lines and issuing recommendations.

INTERNATIONAL VOLT.

Voltage that will produce a current of one international ampere through a resistance of one international ohm. One international volt equals 1.00033 absolute volts.

INTERNATIONAL WATT.

Power expended when one international ampere flows between two points having a potential difference of one international volt. One international watt equals 1.00018 absolute watts.

INTEROFFICE TRUNK.

Direct trunk between local central offices in the same exchange.

INTERPHASE TRANSFORMER.

Autotransformer or a set of mutually coupled reactors used in conjunction with three phase rectifier transformers to modify current relations in the rectifier system so as to increase the number of rectifier tubes which carry current at any instant.

INTERPHONE SYSTEM.

Intercommunication system such as that in an aircraft or other mobile unit.

INTERPHONE/INTERCOM.

Telephone apparatus by means of which personnel can talk to each other within an aircraft, tank, ship or activity.

INTERPLANETARY SPACE.

Area between planets.

INTERPOLATOR.

Determination of an intermediate value between fixed values from some known or assumed rate or system of change.

INTERPOLE.

Auxiliary pole placed between the main poles of a direct-current generator or motor to produce a flux that assists reversal of current in the

short-circuited armature coil at each instant, thereby reducing sparking at the commutator.

INTERPOSITION TRUNK.

Trunk which connects two positions of a large switchboard so that a line on one position can be connected to a line on another position.

INTERROGATOR.

Pulse transmitter used exclusively for exciting a transponder.

INTERROGATOR SUPPRESSED TIME DELAY.

Overall fixed time delay between transmission of an interrogation and reception of the reply to this interrogation at zero distance.

INTERROGATOR-RESPONDER.

Transmitter-receiver capable of accepting the challenge of an interrogator and automatically transmitting an appropriate reply. The equipment can be utilized for IFF, radar navigation, or extending radar range. (Reference: TRANSPONDER.)

INTERROGATION SIGNAL.

Signal sent out by an interrogator to a ship or aircraft whose identity is unknown.

INTERRUPTED CONTINUOUS WAVES.

Waves that are interrupted at a constant audio-frequency rate.

INTERRUPTER.

1. Magnetically operated device for opening and closing an electric circuit rapidly and periodically; used in the primary circuit of a transformer supplied from a dc source, and in doorbells and buzzers.

2. Used to provide interrupted ringing cycles; may also be employed, with the release alarm, to start signal alarm circuits of the switching equipment and thus provide timed delay in sounding an alarm in the event of a failure.

INTERRUPTING RATING FUSE.

Rating based upon the highest RMS alternating current or direct current which it will successfully interrupt under the conditions specified.

INTERRUPTING TIME.

Interval existing between the energizing of the

trip coil of a circuit breaker, at rated voltage, and the interruption of the circuit.

INTERSTAGE.

Between stages.

INTERSTAGE COUPLING.

Coupling between vacuum-tube stages.

INTERSTAGE TRANSFORMER.

Transformer used to provide coupling between two vacuum-tube stages.

INTERSTATION NOISE SUPPRESSION.

Means of suppressing the noise resulting from increased gain when a high-gain receiver with automatic volume control is tuned between stations. The suppression circuit automatically blocks the audio-frequency input of the receiver when no signal exists at the second detector. (Reference: INTERCARRIER NOISE SUPPRESSION).

INTERSTELLAR SPACE.

Area between stars in a galaxy.

INTERTOLL DIALING.

Dialing over intertoll trunks.

INTERTOLL TRUNK.

Trunk between toll switchboards in different offices.

INTERVAL.

Space between objects measured from side to side, as in an aircraft formation.

MARKING AND SPACING. In telegraph communication, the intervals which correspond, according to convention, to one condition or position of the originating transmitting contacts, usually a closed condition; spacing intervals are the intervals which correspond to another condition of the originating transmitting contacts, usually an open condition.

NYQUIST. Maximum separation in time which can be given to regularly spaced instantaneous samples of a wave of band width W for complete determination of the wave form of the signal. Numerically, it is equal to $1/2w$ seconds.

RADAR REFLECTION. Length of time required for a radar pulse to travel from the source to the target and return to the source, taking the velocity of radio propagation to be equal to the velocity of light, 2.998×10^8 m/sec, or 299.8 m/micro-sec. Since the pulse must travel, in all, twice the distance to the target (out and back), the apparent velocities obtained are only one-half of the true velocity of the pulse. Likewise, the reflection intervals are just twice as great when target ranges are considered. The following table, as calculated, takes into consideration both travel to the target and return:

Apparent Velocity (Travel/Unit Time)	
Radar Ranges	Reflection Intervals
149.9 m/micro-sec	0.006671 micro-sec/m
491.8 ft/micro-sec	0.002033 micro-sec/ft
163.9 yd/micro-sec	0.006101 micro-sec/yd
0.0932 statute mi/micro-sec	10.735 micro-sec/statute mile
0.0809 nautical mi/micro-sec	12.361 micro-sec/nautical mile

RETURN. Interval corresponding to the direction of sweep not used for delineation.

TRACE. Interval corresponding to the direction of sweep used for delineation.

INTERVAL TIMER.

Device for measuring the time interval between two actions. The electronic version may consist of an arrangement for charging a capacitor at a predetermined rate during the time interval being measured, then measuring the quantity of electricity in the capacitor and computing from it the time interval by means of the formula $Q=It$, where Q is the quantity in coulombs, I the current in amperes, and t the time in seconds.

INTERVENTION BUTTONS.

Switches provided on the wing panels of situation-display consoles, and on auxiliary consoles

to enable operators to provide instructions to a computer.

INTER-WORD SPACE.

That space, equal to seven unit lengths, between words or coded groups. Term used in radiotelegraphy.

INTERZONE POLICE STATION.

Station used by a police department for radiotelegraph communication with similarly licensed stations in adjacent zones or with the nearest interzone police station in case there is no similarly licensed station in the adjacent zone, with stations within the zone, and with mobile police units equipped for radiotelegraph reception.

INTL (INTERNATIONAL).

INTRA.

Within, and only within, a particular Service of one nation.

INTRA-CHARACTER SPACE.

That space, equal to one unit length, between elements of a character where no signal is heard. Term used in radio-telegraphy.

INTRAFAX.

Trade name given to the Western Union Telegraph Company's various facsimile systems for private use.

INTRINSIC CONTACT POTENTIAL DIFFERENCE.

True potential difference between two perfectly clean metals in contact.

INTRUSION-DETECTION SYSTEM.

Photoelectric, capacitance-controlled, electric, acoustic, or other system for setting off an alarm that announces the presence of an intruder at the boundaries of a protected area or inside that area.

INVAR.

Alloy of nickel and iron, containing about 36 percent nickel, which remains essentially constant in length over a wide range temperature.

INVENTORY.

Amount of property on hand at any given time; an itemized list of such property.

INVERSE FEEDBACK.

Process whereby a part of the output power of

an amplifying device is returned to its input circuit in such a manner that it tends to cancel the input. (Reference: DEGENERATION)

INVERSE MODULATION.

Classified definition. (Reference: AFM 100-50.)

INVERSE NETWORKS.

Two, two-terminal networks are said to be inverse when the product of their impedances is independent of frequency within the range of interest.

INVERSE NEUTRAL TELEGRAPH TRANSMISSION.

That form of transmission in which marking signals are zero current intervals and spacing signals are current pulses of either polarity.

INVERSE PEAK VOLTAGE.

1. Peak value of the instantaneous voltage across a rectifier tube during the half of the cycle that is not conducting.
2. Highest negative voltage reached between a rectifier-tube plate and its cathode.

INVERSE PHOTOELECTRIC EFFECT.

Transformation of the kinetic energy of a moving electron into radiant energy, as in the production of X-rays.

INVERSE PIEZOELECTRIC EFFECT.

Contraction or expansion of a piezoelectric crystal under the influence of an electric field as in crystal headphones.

INVERSE SQUARE LAW.

Law of optics which states that the intensity of light varies inversely as the square of the distance from the source of light. Thus, moving twice-as far away gives one-fourth as much light intensity.

INVERSE VOLTAGE.

Effective voltage existing across a rectifier tube during that half of the cycle in which current does not flow.

INVERSION.

1. Bending of a radio beam due to the upper part of the beam being slowed down by traveling through denser air. This may occur when a body of cold air moves in under a moisture-laden body of air.

2. Process of producing inverted or scrambled speech by beating an audio-frequency signal with a fixed band of the resulting beat frequencies. The original low audio frequencies then become high frequencies, and vice versa.

INVERTED AMPLIFIER.

Two-tube vacuum-tube amplifier stage in which the control grids are grounded and the driving excitation is applied between the cathodes. The grid then serves as a shield between the input and output circuits. The output circuit capacitance is greatly reduced; an important advantage in high-frequency operation.

INVERTED L ANTENNA.

Antenna consisting of one or more horizontal wires to which a connection is made by means of a vertical wire at one end.

INVERTED SPEECH.

Speech rendered unintelligible by inverting the speech frequencies. Used for secret transmission of speech.

INVERTER.

Device for converting direct current into alternating current.

ION.

Electrified particle which is formed when an atom or group of atoms loses or gains one or more electrons. If electrons are lost, the result is a positive ion; if electrons are gained, the result is a negative ion.

ION COUNTER.

Tubular ionization chamber used for measuring the ionization of air.

ION MIGRATION.

Movement of ions produced in an electrolyte by the application of an electric potential between electrodes.

ION ROCKET.

Spaceship power plant, still to be developed, that produces thrust by the reaction obtained from ejecting a high-velocity stream of ions.

ION TRAP.

Electrode in the electron gun of a television picture tube, arranged to attract negative ions and

prevent them from reaching the luminescent screen.

IONIC FOCUSING.

Focusing of the electron beam in a cathode-ray tube by varying the filament voltage and temperature, thereby changing the radial electrostatic focusing field that is automatically produced by accumulations of positive ions in the tube. (Reference: GAS FOCUSING.)

IONIZATION.

1. Act or the result of any process whereby a neutral atom or molecule acquires a charge of either sign, or by which electrons are liberated.
2. Formation of electrically charged particles can be produced by high-energy radiation such as light or ultraviolet rays, or by collisions of particles in thermal agitation.

IONIZATION CHAMBER.

Radiating, detecting, and measuring device operating on the principle of discharge of a static charge due to ionization of the surrounding medium. One device is an inclosure containing two or more electrodes between which an electric current may be passed when the inclosed gas is ionized. It is commonly used for determining the intensity of Roentgen rays and other ionizing rays.

IONIZATION CURRENT.

Electric current resulting from the movement of electric charges in an ionized medium, under the influence of an applied electric field.

IONIZATION GAGE.

1. Pressure gage for measuring the degree of vacuum. It is based on the quantitative relation between pressure and ionization current in a vacuum tube.
2. Device used to measure the intensity of X-ray radiation by metering an ionization current caused by the radiation to be measured.

IONIZATION POTENTIAL.

Potential at which ionization begins within a gas-filled tube. This potential is slightly lower than

ION

the firing or striking, potential at which complete ionization takes place.

IONIZE.

To convert into ions.

IONIZED LAYERS.

Layers of increased ionization within the ionosphere. Believed to be caused by solar radiation, and labeled the D, E, and F layers. Responsible for absorption and reflection of radio waves and important in connection with communication and the tracking of satellites and other space vehicles.

IONIZING EVENT.

Event in which ionization is produced.

IONIZING RADIATION.

Radiation which produces ionization, directly or indirectly.

IONOMETER.

1. Instrument for measuring the quantity or intensity of Roentgen rays (X-rays).
2. Ionization chamber used to measure the intensity of a radiation that is capable of producing ionization.

IONOSPHERE.

That part of the earth's outer atmosphere where ions and free electrons are normally present in quantities sufficient to affect the propagation of radio waves. According to current opinion, the lowest level of the ionosphere is approximately 25 miles above the earth's surface. So called because of the ionized air formed there by action of the sun's rays. These layers are known collectively as the Heaviside Layer. (Reference: HEAVISIDE LAYERS.)

Note. The ionization is not uniformly distributed, but is stratified. Such layers have no sharp boundaries and vary in altitude and density with time and sunspot activity.

D layer—exists during the day from 30 to 50 miles in altitude.

E₁ layer—exists at a height of from 50 to 90 miles.

E₂ layer—sporadic height density ionization in the summer.

F layer—exists as a single layer at night at a height of from 100 to 250 miles. During the day it separates into two layers; F₁ from 120 to 150 miles, and F₂ from 150 to 200 miles in the summer to 90 to 190 miles in winter.

IONOSPHERIC DISTURBANCE.

Variation in the state of ionization of the ionosphere beyond the normally observed, random day-to-day variation from average values for the location, date, and time of day under consideration.

IONOSPHERIC PREDICTION.

Forecasting of ionospheric conditions and the preparation of radio propagation data derived therefrom.

IONOSPHERIC STORM.

Disturbance characterized by wide variations from normal in the state of the ionosphere, including effects such as turbulence in the F region and increases in absorption in virtual height. The effects are most marked in high magnetic latitudes and are associated with abnormal solar activity.

IONOSPHERIC STORMS.

Periods in which the ionosphere is disturbed from the normal condition. The virtual heights and the critical frequencies are abnormal and during intense storms the ionosphere is diffused and expanded. Increased ionospheric absorption may be noted during very severe storms. These storms occur concurrently with magnetic storms and probably are caused by abnormal particle radiation from the sun.

IONOSPHERIC WAVE.

Radio wave that is propagated by reflection from the ionosphere. (Reference: SKY WAVE.)

IP.

Symbol commonly used for the plate current of a vacuum tube.

IP (INITIAL POINT).

1. Point on the ground, identified visually or by

electronic means, over which an aircraft begins a bomb run, a run over a drop zone, or the like.

2. Assembly point at which a march or movement begins.

3. First point at which a moving object is located for indication on a plotting board.

IPA. (INTERMEDIATE POWER AMPLIFIER).

IR. (INTERROGATOR-RESPONSOR).

Interrogator-responder built in a single unit.

IR DROP.

Voltage drop produced across a resistance R by the flow of current I through the resistor.

$I^2 R$ LOSS.

Power loss in transformers, generators, connecting wires, and other parts of a circuit due to current flow I through the resistance R of the conductors.

IRAC (INTERDEPARTMENT RADIO ADVISORY COMMITTEE).

National committee formed to coordinate the needs of both Government and non-Government agencies for frequency-spectrum space, and to formulate policies in connection with the use of radio frequencies by the Government.

IRIS.

1. Metallic plate, usually of small thickness compared with the wave length, perpendicular to the axis of a waveguide and partially blocking it. An iris acts like a shunt element in a transmission line; it may be inductive, capacitive, or resonant.

2. Adjustable diaphragm or window.

IRON, BREAK.

Strip of steel with holes for two insulator pins used on a cross arm for dead-ending a wire in each direction.

IRON LOSS.

Power loss occurring in iron cores of electric machines, coils, transformers, etc., due to hysteresis and eddy currents.

IRON-CORE COIL.

Coil in which iron forms part or all of the magnetic circuit, linking its winding. In a choke coil, the core is usually built up of laminations of sheet iron.

IRON-CORE TRANSFORMER.

Transformer in which iron forms part or all of the magnetic circuit, linking the transformer windings.

IRON-VANE INSTRUMENT.

Measuring instrument in which the movable element is an iron vane.

IRRADIATION.

Application of X-rays, radium rays, or other radiation to a patient or object.

IRREGULARITY.

Condition where the impedance characteristics change from normal.

IRT (INTERROGATOR-RESPONSOR-TRANSPONDER).

Combined unit capable of acting both as interrogator-responder and as a transponder.

IS (INITIATION SUPERVISOR).

In a SAGE center, a noncommissioned officer responsible to the Air Surveillance Officer for the operation of manual initiation and the monitoring of automatic initiation.

IS (ISLAND).

1. Section in a jet aircraft where different lines, as oil, fuel, and hydraulic lines, are braced to prevent failure from vibration.

2. Structure, on an aircraft carrier, above the flight deck containing the conning tower, navigation bridge, etc.

ISOBARS.

Line used on meteorological maps, denoting places having the same atmospheric pressure at a given time.

ISOCHRONE.

Line (on a map or chart) joining points associated with a constant time difference in reception of radio signals.

ISOCHROME DETERMINATION.

Radio location in which a position line is determined by the difference in the transit times of signals along two paths.

ISOCHRONOUS CIRCUITS.

Circuits having the same resonant frequency.

ISOCLINIC LINES.

On a magnetic map, lines passing through points of equal magnetic inclination or dip. (Reference: ACLINIC LINES.)

ISODOSE LINES.

Lines drawn on a map of radiologically contaminated area connecting points of equal radiation intensity.

ISODYNAMIC LINES.

On a magnetic map, lines passing through points of equal strength of the earth's magnetic field.

ISOELECTRONIC.

Having the same number of electrons outside the nucleus of the atom.

ISOGONIC LINE OR ISOGONAL.

Imaginary line on the earth at all points on which the magnetic variation is the same.

ISOGONIC LINES.

On a magnetic map, lines passing through points of equal magnetic declination.

ISOLATING DIODE.

Diode used to pass signals in one direction through a circuit but which prevents signals and voltages from being transmitted in the opposite direction.

ISOLATING SWITCH.

Switch intended for isolating an electric circuit from the source of power. It has no interrupting rating and is intended to be operated only after the circuit has been opened by some other means.

ISOLATION NETWORK.

Network inserted in a circuit or transmission line to prevent interaction between circuits on each side of the insertion point.

ISOMER.

One of two or more substances composed of molecules having the same kinds of atoms in the same proportions but different arrangements of those atoms and, hence, different physical and chemical properties. Isomers with different molecular weights are called polymers. Examples: ACETYLENE (C_2H_2) and benzene (C_6H_6).

ISOTOPES.

Two or more forms of the same element differing slightly in atomic weight, but having the same chemical properties. All isotopes of a given element have the same atomic number or nuclear charge. The nuclei of all isotopes of a given element have the same number of protons, differing only in the number of neutrons. Most chemical elements occur as a mixture of several isotopes, such as a mixture of atoms which are alike in chemical properties but fall into several groups according to weight. Certain isotopes are unstable or radioactive and through spontaneous emission, will give off small particles and/or high frequency electromagnetic radiations changing the isotopes to a stable isotope of the element or a different element.

ISOTROPIC.

Having the same properties in all directions.

ISOTROPIC ANTENNA.

Hypothetical antenna radiating or receiving equally in all directions. In the case of electromagnetic waves, isotropic antennas do not exist physically but represent convenient reference antennas for expressing directional properties of actual antennas.

ISOTROPIC BODY.

Body in which the value of any given property is independent of the direction of measurement.

ISOTROPIC RADIATOR.

Radiator which sends out energy equally in all directions.

ITERATIVE IMPEDANCE.

Impedance measured at the input terminals of any circuit, network, or device when an infinite number of identically similar devices are con-

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nected in series with the original by connecting the output terminals of the first to the input terminals of the second, the output terminals of the second to the input terminals of the third, etc.

ITU (INTERNATIONAL TELECOMMUNICATIONS UNION).

Civil international organization established to provide standardized communications procedures and practices including frequency allocation and radio regulations on a world-wide basis.

J

J

- J.
1. Jet
 2. Joule
 3. Designation used for the complex operator j which is mathematically equivalent to $\sqrt{-1}$.
 4. L/MF (200-415 KC). Voice facility on other than range facility.

J/AN (JOINT AIDS TO NAVIGATION PANEL).

J/C (JOINT COORDINATING PANEL).

J/CE (JOINT COMMUNICATIONS EQUIPMENT PANEL).

J/CEE (JOINT COMMUNICATIONS CIRCUIT ENGINEERING PANEL).

J/CP (JOINT COMMUNICATIONS PUBLIC PANEL).

J/EW (JOINT ELECTRONIC WARFARE PANEL).

J/FA (JOINT FREQUENCY ALLOCATION PANEL).

J/FC (JOINT FREQUENCY CONTROL DEVICES SUB PANEL).

J/MP (JOINT METHODS AND PROCEDURES PANEL).

J/NC (JOINT NOMENCLATURE SUB PANEL).

J/S RATIO.

Ratio normally expressed in db of the total interference power to the signal carrier power in the transmission medium at the receiver. Full evaluation using this term requires information concerning the interference spectrum and the receiver bandwidth. This term is useful in system performance evaluation.

J/SC (JOINT SECURITY AND CRYPTOGRAPHIC PANEL).

J/SE (JOINT SIGNAL AND EVALUATION ANALYSIS SUB PANEL).

J/SP (JOINT STRATEGIC COMMUNICATIONS PLANS PANEL).

J/ST (JOINT STANDARDIZATION PANEL).

J/TP (JOINT TACTICAL COMMUNICATIONS PLANS PANEL).

J/WP (JOINT WAVE PROPAGATION PANEL).

J/WS (JOINT WEATHER SECURITY AND CRYPTOGRAPHIC SUB PANEL).

J-ANTENNA.

Antenna having a configuration resembling a J, comprising a half-wave antenna, end-fed by a parallel wire quarter-wave section.

J-CARRIER SYSTEM.

Broad-band carrier system, providing 12 telephone channels, which utilizes frequencies up to about 140 kilocycles by means of effective four-wire transmission on a single open-wire pair.

J-DRAWING.

Series of drawings which show a completely assembled and wired unit of equipment.

J-INDICATOR.

Type of radar indicator which is a modification of the type A indicator. The time sweep produces a circular range scale near the circumference of the cathode-ray tube face. The signal appears as a radial deflection of the time trace. No bearing indication is given.

J-SCAN.

Type of presentation on a cathode-ray indicator in which time is the angular coordinate and signals appear as deflections in a radial direction.

J-SCOPE

Cathode-ray oscilloscope arranged to present a J-scan.

JAAF (JOINT ARMY-AIR FORCE).

JAARFAR (JOINT ARMY-AIR FORCE ADJUSTMENT REGULATION).

JAAFCTB (JOINT ARMY-AIR FORCE COMMERCIAL TRAFFIC BULLETIN).

JACK.

1. Stationary part of a circuit connector. With its counterpart, a plug, it is used to connect or disconnect electrical circuits.

2. Portable machine for exerting pressure or lifting heavy objects short distances.

ANSWERING. Jack on which a subscriber calls in and is answered by an A-operator.

PATCHING. Jack which permits the interconnection of circuit elements.

PIN. Jack to which a plug in the form of a pin is connected.

POLE. Mechanical lifting unit large enough to raise a heavy pole.

SECONDARY. In older toll testboards, these jacks, usually in groups of six, terminate also the drop side of the repeating coil or equivalent and the switchboard termination. When provided, listening jacks are connected across the switchboard drop.

TEST. 1. Appearance of a circuit or circuit element in jacks for testing purposes.

2. In recent testboard practice, a jack multiplied with the switchboard operating jack.

JACK FIELD.

Panel area in which jacks are installed.

JACKS, DIAL.

Strip of jacks associated with and bridged to a regular outgoing trunk jack circuit to provide a connection between the dial cords and the outgoing trunks.

JACKS, MULTIPLE.

Series of jacks with tip, ring, and sleeve respectively connected in parallel and appearing in different panels of the face equipment.

JACKS, SERIES BRIDGED.

Jack multiple arrangement in which the tip and ring leads are connected through break contacts at each jack. Insertion of a plug opens the leads to the line relay or answering lamp and extinguishes the line lamp.

JAFF.

Slang expression for the combination of electronic and chaff jamming.

JAG.

In facsimile, distortion in the received copy caused by momentary errors in synchronism between the scanner and recorder mechanisms. Does not include slow errors in synchronism due to instability of the frequency standards used in the facsimile transmitter and recorder.

JAMAG (JOINT AMERICAN MILITARY ADVISORY GROUP).

JAMMAT (JOINT AMERICAN MILITARY MISSION FOR AID TO TURKEY).

JAMMER.

Electronic device which intentionally introduces unwanted signals into the radar set for the purpose of denying information.

JAMMER BAND.

Band of radio frequency in which the output of the jammer is concentrated. It may be taken as the band between the points where the intensity is 3 db down from the maximum observed in the band. The carrier power should be excluded from this computation. When the interference spectrum is very irregular, it may be necessary to estimate the jammer band by inspection.

JAMMING.

Transmission of electromagnetic signals in such a manner as to interfere with the reception of electromagnetic signals from a friendly station. (Reference: AFM 100-50.)

OFF-TARGET. Employment of a jammer at a point removed from the main units of the force. This is done to defeat the enemy's use of our jamming signals to his advantage.

PASSIVE. Utilization of confusion reflectors to return spurious and confusing signals to the transmitting radar set.

SPOT. Jamming of a specific channel or frequency.

JAMMING EFFECTIVENESS.

Percentage of information in a test message incorrectly received at any given J/S ratio.

JAMMING INTERFERENCE.

Wave intentionally created to disturb radio reception. The interference may consist of an electromagnetic wave in space, the current in or voltage impressed upon a circuit element, or the sound impinging upon the ear from a loud speaker or headset.

JAN SPECIFICATION.

Joint Army-Navy Specification.

JANAP (JOINT ARMY-NAVY-AIR FORCE PUBLICATION).

JANAST (JOINT ARMY-NAVY-AIR FORCE SEA TRANSPORTATION BULLETIN)

JANPAC.

General message originated by CINCPAC, addressed to US Forces under his command.

JAR.

Class or composition container for the element and electrolyte of a lead-acid storage cell.

JBUSDC (JOINT BRAZIL-UNITED STATES DEFENSE COMMISSION).

JBUSMC (JOINT BRAZIL-UNITED STATES MILITARY COMMISSION).

JCA (JOINT COMMISSION ACTIVITY).

JCC (JOINT COMMUNICATIONS CENTER).

JCEC (JOINT COMMUNICATIONS-ELECTRONICS COMMITTEE).

JCI (JOINT COMMUNICATIONS INSTRUCTIONS).

JCC-COMNET (JOINT COORDINATION CENTER COMMUNICATIONS NETWORK).

JEF (JOINT EXPEDITIONARY FORCE).

JET.

Turbine-driven aircraft which gets its engine propulsion from the thrust of exhaust gases.

JET STREAM.

High altitude air currents which move at speeds often exceeding 300 MPH.

JETP (JET PROPELLER).

JEWEL BEARING.

Natural or synthetic jewel, usually sapphire, having a carefully ground conical depression that serves as a bearing for the pivot of a meter movement, or as a bearing in other delicate instruments.

JIC (JOINT INTELLIGENCE CENTER).

JICA (JOINT INTELLIGENCE COLLECTING AGENCY).

JITTER.

1. Short-time instability of a signal. The instability may be in either amplitude or phase, or both. The term is applied especially to signals reproduced on the screen of a cathode-ray tube. The term tracking jitter is used to describe minor variations in the pointing of an automatic tracking radar.

2. Random departure from regularity of repetition.

3. In facsimile, distortion in the received copy caused by momentary errors in synchronism between the scanner and recorder mechanisms. Does not include slow errors in synchronism due to instability of the frequency standards used in the facsimile transmitter and recorder.

JLPG (JOINT LOGISTICS PLANNING GROUP).

JLTA (JOINT LAND TRANSPORTATION AGENCY).

JMMAT (JOINT MILITARY MISSION FOR AID TO TURKEY).

JMUSDC (JOINT MEXICO-UNITED STATES DEFENSE COMMISSION).

JOC (JOINT OPERATIONS CENTER).

JOHNSON NOISE.

Background noise heard in radio receivers due to thermal agitation in the circuits. This noise sets the limits of the lowest power levels necessary for effective operation.

JOINT.

1. Union of two conductors.

2. Soldered connection of a conductor to a terminal.

3. Connection of two or more cable sheaths.

4. Between two or more services of the same nation. (When all services are not involved, the participating services shall be identified; example: Joint Army-Navy).

HIGH RESISTANCE. Union of conductors or conductor and terminal which is faulty and reduces current flow, or causes a drop in voltage at the union.

INSULATING. Joining of two cable sheaths in such a manner that current does not flow from one to the other.

PRESSURE. Connection of two conductors by means of a tightly crimped sleeve.

ROLLED. Union of two conductors by means of a sleeve which is pressed into place by rollers

ROSIN. Connection of a conductor to a piece of equipment or another conductor supposedly securely soldered, but actually held together by rosin flux. Same as rosin connection.

SOLDERED. Joint, already electrically good, which is made mechanically more secure and corrosion free with solder.

TWISTED. Union of two conductors wound tightly around each other. A sleeve may be used after the conductors are twisted.

WIPE. Junctions between the lead sheaths of two or more cables made by placing a lead sleeve in position, beating the ends down, and closing by wiping with molten lead.

JOINT ARMY-NAVY-AIR FORCE PUBLICATION.

Communications-Electronics publication prepared and promulgated for United States use by the United States Joint Communications-Electronics Committee (JCEC). JANAPs are published to provide Communications-Electronics instructions and procedures that have interservice application and may also be authorized for intraservice use.

They are distributed separately by the three services.

JOINT CIRCUIT.

Communications link in which the elements of more than one service participate by control, operation, management, etc.

JOINT COMMUNICATION.

Common use of communication facilities by two or more services of the same nation.

JOINT COMMUNICATIONS-ELECTRONICS GROUP.

Organization, reporting to the Joint Chief of Staff, the purpose of which is to ensure the maximum economy and efficiency of military communications and to strengthen the direction and coordination by the JCS of Communications-Electronics activities of the Department of Defense.

JOINT FORCE.

General term applied to a force which is composed of a significant elements of the Army, the Navy (Marine Corps), and the Air Force, or any two of these services, operating under a single commander authorized to exercise unified command or operational control over such joint forces.

JOINT OPERATION CENTER.

Central joint agency of senior ground forces and air forces levels organized for the purpose of exchanging air and ground battle information, and for the organization of the combat effort of the air forces in tactical air support of ground forces operations. It is composed of:

1. Air-Ground Operations Section, which is the agency to which the requests from the various ground forces headquarters are channeled, evaluated, given ground force approval or disapproval and submitted to the supporting tactical air forces.

2. Combat Operations Section which is the agency through which the tactical air commander assigns, controls, and coordinates the tactical air effort.

JOINT SERVICING.

That servicing whereby a jointly staffed and financed activity performs services for two or more departments.

JOINT SPECTRUM EVALUATION GROUP.

Agency of the JCEC concerned with efficient utilization of the frequency spectrum by the military services.

JOINT STAFF.

1. Staff of a commander of a joint force, which includes members from the several services comprising the force. These members should be assigned in such a manner as to insure an understanding of the tactics, techniques, capabilities, needs, and limitations of the component parts of the force by the commander. Officers from each service comprising the force should hold key positions of responsibility in the staff.
2. Staff of the Joint Chiefs of Staff organization as provided for under the National Security Act of 1947, amended.

JOINT TASK FORCE.

Joint force composed of assigned or attached elements of the Army, the Navy or Marine Corps, and the Air Force, or of any two of these Services.

JOINT USE.

Two or more utility companies occupying the same plant by agreement.

JOINT ZONE.

Area established for the purpose of permitting friendly surface, air, and sub-surface forces to operate simultaneously.

JONES PLUG.

Special type of polarized connector which is designed in the form of a receptacle with a number of contacts.

JOULE

Unit of energy or work. The absolute joule is equal to 10 million ergs. The international joule is equal to the work required to maintain a current of one ampere for one second in a resistance of one ohm. One joule is equal to one watt-second.

JOULE EFFECT.

1. Heating effect produced by the flow of current through a resistance.
2. Change in the dimensions of a ferromagnetic object when placed in a magnetic field. (Reference: MAGNETOSTRICTION.)

JOULE'S LAW.

Rate at which heat is produced in an electric circuit having constant resistance is proportional to the square of the current.

JPR (JOINT PROCUREMENT REGULATION).

JRI (JOINT RECOGNITION AND IDENTIFICATION SUB PANEL).

JCS (JOINT CHIEFS OF STAFF).

Body within the department of defense consisting of the Chief of Staff, United States Army, the Chief of Naval Operations, the Chief of Staff, United States Air Force, and a chairman, serving as the principal military advisory to the President, the National Security Council, and the Secretary of Defense, and authorized to conduct certain military operations direct, such as those of continental air defense. The chairman presides over the JCS but does not vote. Prior to 1949, the JCS had no chairman.

JTAC (JOINT TECHNICAL ADVISORY COMMITTEE).

Formed jointly by the Radio Manufacturers Association and the Institute of Radio Engineers to obtain and evaluate information of a technical or engineering nature relating to the radio art for the purpose of advising government and other professional and industrial groups.

JTE (JOINT TEST EQUIPMENT SUB PANEL).

JTF (JOINT TASK FORCE).

JUICE.

Slang, electric current.

JUMP.

To conditionally or unconditionally, cause the next instruction to be selected from a specified storage location, as in an electronic computer.

JUMPER.

Short length of conductor used to make a connection between terminals or around a break in a circuit, or around an instrument. It is usually a temporary connection.

JUNCTION.

1. Connection between two or more conductors or two or more sections of transmission lines.
2. Contact between two dissimilar metals or materials, as in a rectifier or thermocouple.
3. Meeting of two pole lines.
4. Point where the continuity of a pole line changes, as where a branch takes off.

JUNCTION BOX.

1. Enclosed distribution panel for connecting or bonding one or more electric circuits without the use of permanent splices.
2. Box enclosing the terminals of wires or cables, in which the latter may be connected as desired.

JUNCTION POLE.

Pole at the end of a transposition section of an open-wire line or the pole common to two adjacent transposition sections.

JUNCTION STATION.

Microwave relay station that joins a microwave radio leg or legs to the main or through route.

JUNCTION TRANSPOSITION.

Transposition located at the junction pole between two transposition sections of an open-wire line.

JUNCTOR.

In crossbar systems, a junctor is a circuit extending between frames of a switching unit and terminating in a switching device on each frame.

JUSMAG (JOINT UNITED STATES MILITARY AIR GROUP, GREECE).**JUSMAGPHIL (JOINT UNITED STATES MILITARY AIR GROUP, PHILIPPINES).****JUSMAP (JOINT UNITED STATES MILITARY ADVISORY AND PLANNING GROUP).****JUTE.**

Cordage fiber, such as hemp, saturated with tar and used as a protective layer over cable.

JUTE PROTECTED CABLE.

Cable having the sheath covered by a wrapping of tarred jute on other fiber.

JWI (JOINT WARNING AND TARGET INFORMATION PANEL).

K

K.

Solar absorption index which relates the sun's angle at various latitudes and local times with the ionospheric absorption.

K (FAKER).

Classification for a known friendly aircraft simulating an enemy during an air defense training mission.

K-BAND.

Frequency range which extends approximately from 23,500 to 26,000 megacycles.

K-CARRIER SYSTEM.

Broad-band carrier system, providing 12 telephone channels, which utilizes frequencies up to about 60 kilocycles by means of four-wire transmission on cable facilities.

K-INDICATOR.

Modification of the type A display. Employs a double trace with the second trace superimposed and offset for use with lobe-switching radar. Gives range and either bearing or elevation. (Reference: TYPE K DISPLAY.)

K-SCAN.

Modification of type A scan used for aiming a double-lobe system in bearing or elevation. The entire range scale is displaced in the direction of the antenna lobe in use. One signal appears as a double deflection from the range scale, and the relative amplitudes of these two pips serve as an indication of the error in aiming the antenna.

K-SCOPE.

(Reference: K-INDICATOR.)

K-SERIES.

Series of frequencies in the X-ray spectrum of an element.

K_a.

Auroral absorption index which relates the average auroral absorption with the geographic location of the ionospheric reflection points.

KAROLUS CELL.

Light valve depending on the variation in the polarization of a liquid which changes in magnetic field strength.

KAROLUS SYSTEM.

System of phototelegraphy in which a phototube is employed at the transmitter for scanning the subject copy and a Kerr cell is used at the receiver. Used chiefly in Europe.

KC (KILOCYCLE(S)).

One-thousand cycles per second.

KCS (KILOCYCLES PER SECOND).

Kd.

Absorption index for a route longer than 4000 kilometers.

KEEP-ALIVE.

Auxiliary electrode in the TR tube, to which a negative dc potential is applied. The keep-alive voltage is on continuously in order to furnish sufficient ions for almost instantaneous discharge across the main gap with small leakage power to the crystal.

KEEP-ALIVE ELECTRODE.

Supplementary electrode in a gas-discharge tube to which sufficient voltage is applied to keep the gas at or near the point of breakdown by general ionization.

KEEPER.

Piece of magnetic material placed across the pole pieces of a permanent magnet to enable it to maintain its magnetic strength by providing a low reluctance path for the magnetic field.

KELVIN BALANCE.

Instrument for measuring current by sending it through a fixed coil and a movable coil attached to one arm of a balance, and comparing the resulting force between the coils with the force of gravity acting on a known weight at the other end of the balance arm.

KELVIN SCALE.

Ideal, absolute-temperature scale, proposed by Lord Kelvin (1848), equal to the quantity of

work derived from a working substance performing in perfect Carnot cycles between the respective isothermals. It closely approximates the ordinary hydrogen-pressure absolute scale. $^{\circ}\text{K}$ equals Centigrade reading minus 273.18.

KENNELLY-HEAVISIDE LAYER.

Layer of highly ionized air in the outer atmosphere which reflects certain high frequency radio waves. It reaches its maximum density about 70 miles above the earth's surface. Named for Sir Oliver Heaviside who predicted its existence.

KENOTRON.

High vacuum tube with thermionic cathode, in which one-way current flow is controlled by a magnetic field.

KERAUNOPHONE.

Device incorporating radio circuits, used to demonstrate audibly the occurrence of distant lightning flashes.

KERNEL.

1. Line within a current-carrying conductor, along which the magnetic intensity due to the current is zero.
2. Highly stable electron group that remains when a chemically active atom is ionized by the removal of its incomplete outer shell of electrons. (Reference: RUMPF CORE.)

KERR CELL.

Transparent inclosure containing nitrobenzene or some other transparent substance which exhibits electric double refraction and hence can be used to convert a varying voltage into corresponding variations in the intensity of polarized light passing through the cell. Used as a light valve in some mechanical television systems.

KERR EFFECT.

Electro-optical effect in which certain transparent substances become double refracting when subjected to an electric field at right angles to a beam of light. Also the conversion of plane-polarized light into elliptically polarized light when it is reflected from the polished end of a magnet.

KEY.

1. Hand-operated switching device ordinarily formed of concealed spring contacts with an exposed handle or push button, capable of switching one or more parts of a circuit.
2. Symbol or sequence of symbols applied to text in order to encrypt or decrypt.
3. Element of the arrangement of a crypto-system which must be known before encryption or decryption can be carried out.
4. Lever-type switch used for transmitting code signals.

DIAL. Key unit of the subscriber's cord circuit used to connect the dial into the line.

LITERAL. Key sequence in letter form.

MONITOR. Key unit of the cord circuit which enables the operator to listen in but not talk over the line.

RING. Key unit of the cord circuit by which the operator may ring on either the answering or calling cords.

RINGING. Key for connecting signaling current to a line.

SPLITTING. Key used by a manual operator to select either front or back cord independently of the other.

TALKING. Key used to connect a talking set to a line or cord.

TRANSFER. Key used to switch an operator's set from one switchboard to another.

KEY CABINET.

Case, installed on a customer's premises, to permit different lines to the control office to be connected to various telephone stations. It has signals to indicate originating calls and busy lines.

KEY CLICK.

Components of telegraphic radiation that are set up as transients by the opening or closing of the signaling key but are not essential for communication.

KEY CLICK FILTER.

Filter that attenuates the surges produced each time the keying circuit of a transmitter is opened or closed by the key.

KEY LIST.

Publication containing the key for a specific cryptosystem.

KEY PULSE.

System of signaling where numbered keys are depressed instead of using a dial.

KEY PULSING.

Switchboard arrangement using a nonlocking key-set and providing for the transmission of signals corresponding to the key depressions.

KEY SHELF.

Horizontal switchboard shelf on which are mounted all operating keys and a dial, if one is used.

KEY STATION.

Station at which a network radio or television program originates.

KEYBOARD-PERFORATOR

Mechanism which consists essentially of a keyboard, similar to a typewriter keyboard and a punch, by which paper tape is perforated with code symbols that correspond to depressed character-keys of the keyboard. Messages may be transmitted automatically from the tape by a transmitter-distributor.

KEYER.

1. Device which changes the output of a transmitter from one condition to another in accordance with the intelligence to be transmitted.
2. Name often given to a radar modulator.

KEYER ADAPTER.

Device which detects a modulated signal and produces the modulating frequency as a dc signal of varying amplitude. This type of unit is used for radio facsimile transmission.

KEYING.

Forming of signals, such as those employed in

telegraph transmission, by the modulation of direct current or other carrier between discrete values of some characteristic.

BACK-SHUNT. Method of keying a radio transmitter, in which radio-frequency energy is fed to the antenna when the telegraph key is closed, and to an artificial load when the key is open.

KEYING CHIEFS.

Sounds accompanying code signals when the transmitter is unstable and shifts slightly in frequency each time the sending key is closed.

KEYING ELEMENT.

(Reference: DAILY KEYING ELEMENT, MESSAGE KEYING ELEMENT.)

KEYING FREQUENCY.

In facsimile, the maximum number of times a second that a black line signal occurs when scanning the subject copy.

KEYING WAVE.

Emission that takes place in telegraphic communication while the active portions of the code characters are being transmitted. (Reference: MARKING WAVE.)

KEYLESS RINGING.

Form of machine ringing on manual switchboards which is started automatically by the insertion of the calling plug into the jack of the called line.

KEYSHEET, CENTRAL OFFICE.

List in tabular form of all office drawing equipment assemblies and circuits used in the office.

KEYSHEET, MANUAL.

Drawing in tabular form which lists the quantities, type, and location of all circuits appearing in the attendant's switchboard, the test desk, and manual and crash alarm relay racks.

KEYSTONE DISTORTION.

Distortion produced by scanning in a rectilinear manner, with constant amplitude sawtooth waves, a plane target area which is not normal to the average direction of the beam.

KEYSTONE-SHAPED.

Wider at the top than at the bottom, or vice versa.

KEYSTONING.

Producing a keystone-shaped (wider at the top than at the bottom, or vice versa) scanning pattern because the electron beam in the television camera tube is at an angle with the principal axis of the tube.

KI.

Absorption index for the daylight end of a day-night path.

KIDNEY JOINT.

Flexible joint, or air-gap coupling, used in the waveguide of certain radars and located near the transmitting-receiving position. The kidney joint, so called because of its shape, consists of two flanges facing each other but spaced $3/8$ to $1/2$ inch apart. The face of each flange extends about $1/4$ wave length perpendicular to the waveguide and has a skirt about $1/4$ wave length deep about the outside.

KILL SWITCH.

Device for shutting off missile and rocket motors during experiments if something goes wrong.

KILLER CIRCUIT.

Vacuum tube or tubes and associated circuit in which are generated the blanking pulses used to temporarily disable a radar set. The circuit is usually triggered from a pulse obtained from another piece of radar equipment. This disabling is essential to eliminate interference arising from the use of two pulsing systems in close proximity.

KILLER, NOISE.

Device installed in a circuit to reduce its interference to other circuits.

KILLER PULSE.

(Reference: KILLER CIRCUIT.)

KILLER, SPARK.

Network, usually made up of capacitance and resistance in series, connected to absorb and stop sparking, as across a pair of contacts.

KILO.

Prefix meaning 1,000, such as kilocycle and kilowatt.

KILOCYCLE.

Frequency of one thousand cycles per second.

KILOGAUSS.

Unit of magnetic induction; 1,000 gauss.

KILOGRAM.

Practical metric standard of mass and weight. Equal to 1,000 grams or approximately 2.2 pounds.

KILOMETER.

One thousand meters, or approximately 3,280 feet ($6/10$ mile).

KILOMETRIC WAVES.

British term for electromagnetic waves having wavelengths between 1,000 and 10,000 meters.

KILOHM.

1,000 ohms.

KILOLINES.

Unit of magnetic flux equal to 1,000 cgs lines or maxwells.

KILOVAR.

Reactive kilovolt-ampere. Equal to 1,000 reactive power volt amperes.

KILOVAR-HOUR.

Unit equal to 1,000 reactive volt-ampere-hours.

KILOVOLT.

1,000 volts.

KILOVOLT-AMPERE.

1,000 volt-amperes.

KILOVOLTAGE.

Voltage of the order of thousands of volts.

KILOVOLTMETER.

Voltmeter which reads thousands of volts.

KILOWATT.

Unit of electrical power equal to 1,000 watts.

KILOWATT-HOUR.

Unit of electric energy, equal to 1,000 watt-hours or to an average of one kilowatt for a total time of one hour.

KILOWATT-HOUR METER.

Meter that measures and registers electrical energy in kilowatt-hours.

KINEMATICS.

Branch of physics which deals with motion in the abstract, that is, of points or space figures, and apart from its dynamic aspects.

KINESCOPE.

Cathode-ray tube, as in television receivers, in which electrical signals are translated into a visible picture on a luminescent screen.

KINETIC ENERGY.

Energy which a mechanical system possesses by virtue of its motion.

KINETICS.

Branch of physics which deals with the motion of material bodies in relation to the forces acting upon them.

KIRCHOFF'S LAWS:

1. Sum of the currents flowing to a given point in a circuit is equal to the sum of the currents flowing away from that point.
2. Algebraic sum of the voltage drops in any closed path in a circuit is equal to the algebraic sum of the electromotive forces in that path. (Reference: LAWS OF ELECTRIC NETWORKS.)
3. Any of the other laws set forth by G. R. Kirchhoff, German physicist. One of these is: At a given temperature, the ratio of the emissive power of a body to its radiation-absorbing power is the same for all surfaces.

KLYSTRON.

1. Electron tube having an electron beam in which the electrons are periodically bunched by electric fields. Used as an oscillator or amplifier in ultra-high frequency applications such as microwave relay transmitters and receivers.
2. Type of oscillator or amplifier used in connection with the reception of radar signals at microwavelengths; a device for converting dc energy into radio energy by alternately slowing down and speeding up an electron beam (velocity

modulation), utilizing the transit time between two points to produce an alternating current which delivers power to a cavity resonator. The term is applicable to an ultra-high-frequency amplifier or generator that uses the buncher principle; velocity modulation and drift distance, with one or more cavity resonators to produce and use a velocity-modulated beam of electrons.

KLYSTRON CONTROL GRID.

Electrode in the electron gun which controls the emission or beam current of a klystron or other velocity modulated tubes.

KLYSTRON GENERATOR.

Klystron tube used as a generator, with its second cavity or catcher, feeding waves directly into a waveguide.

KLYSTRON OSCILLATOR.

Oscillator employing a klystron tube to generate radio-frequency power.

KLYSTRON REPEATER.

Klystron tube operated as an amplifier and inserted directly in a waveguide in such a way that incoming waves velocity-modulate the electron stream emitted from a heated cathode. A second cavity converts the energy of the electron clusters into waves of the original type but of greatly increased amplitude and feeds them into the outgoing guide.

KLYSTRON TUBE.

Tube that generates oscillations by bunching electrons as a result of velocity modulation of the electron stream. The tube uses the transit time of the electrons between two electrodes as a means of controlling delivery of pulsating energy to a resonator cavity in order to sustain oscillations within the cavity.

Km.

Absorption index for an entirely daylight path at the path midpoint.

KM (KILOMETER).

Unit of measure in the metric system, being one thousand meters, or 3,280.8 feet, nearly two-thirds of a mile.

KMC (KILOMEGACYCLES).

KMH (KILOMEGACYCLES PER HOUR).

KMAG (UNITED STATES MILITARY ADVISORY GROUP TO REPUBLIC OF KOREA).

KNIFE SWITCH.

Form of air switch in which the moving element, usually a hinged blade, enters or embraces the contact clips. In some cases, however, the blade is not hinged and is removable.

KNOB.

Insulator, in one or two pieces, having a central hole for a nail or screw, and one or more peripheral grooves for wire, used for supporting conductors at a definite spacing from the surface wired over.

KNOBS.

1. Various porcelain insulators.
2. Wads of solder placed on cable sheaths to seal holes or cracks.

KNOCKER.

Subassembly in radar equipment, comprising synchronizing and triggering circuits. The knocker

is used to drive the radio-frequency pulse generating equipment in the transmitter and to synchronize the cycle of operation in range units and range indicators with the transmitted pulse. Term is used only with some fire control radars.

KNOCKOUT.

Portion of the wall of a box or cabinet so fashioned that it may be removed readily by the blow of a hammer at the time of installation in order to provide a hole, usually circular in shape, for the entrance of wires or the attachment of conduit, cable, etc.

KNOT.

Unit of speed, equivalent to one nautical mile (6,080.20 feet or 1.15 statute miles) per hour.

KT (KNOT).

Nautical mile per hour.

KV (KILOVOLT(S)).

One-thousand volts of electrical power.

KVA (KILOVOLT AMPERES).

KYMOGRAPH.

Instrument for recording wave-like oscillations of varying quantities for medical studies.

L

L

L.

Compass locator station.

L.

Designation for inductance.

L (LINE).

1. Short for such locations as airline, flight line, front line, shroud line. etc.

2. To line up, as to bring an aircraft's projected line of flight into a direct line with a target, another aircraft, runway, etc.

L (LOST).

Air defense expression used to describe a track status indicating that insufficient radar data is available to sustain continued correlation. It is also an action which may be computer-generated or performed manually.

L-ANTENNA.

One that consists of an elevated horizontal wire having a vertical down-lead connected at one end.

L-INDICATOR.

Modification of the type A display or indicator. Employs a double trace back-to-back for aiming a lobe-switching radar. Gives range and either bearing or elevation. The time sweep produces a vertical range scale. The signal appears as left and right horizontal deflection of equal amplitude when target bearing is zero degrees relative.

L-NETWORK.

Network composed of two impedance branches, one in series with the circuit to which it is connected and the other shunting it.

L-PAD.

Volume control that has essentially the same impedance at all settings. It consists essentially of an L-network arranged so that both of its elements can be adjusted simultaneously.

L-SERIES.

Series of frequencies in the X-ray spectrum of an element, believed to arise from the transition of electrons from various higher quantum states to the state whose principal quantum number is two.

LAB (LABORATORY).

Work room devoted to study or testing in any science.

LABILE OSCILLATOR.

Local oscillator whose frequency is controlled at all times by a signal received from some remote point by radio or over wires.

LABYRINTHINE SPEAKER.

Loudspeaker mounted in an acoustic baffle having air chambers designed to prevent acoustic standing waves.

LACQUER DISKS.

Disks, usually of metal, glass, or paper, which are coated with a lacquer compound (often containing cellulose nitrate) and used either for instantaneous recordings or lacquer masters.

LACQUER ORIGINAL.

Original recording on a lacquer disk which is intended to be used for the making of a metal master.

LACROSSE.

Surface-to-surface missile developed for the Army. It is powered by a solid-propellant rocket motor and is designed for close-support purposes. Its nomenclature is XSSM-A-12.

LADDER ATTENUATOR.

Series of symmetrical sections designed so that the required ratio of the voltage loss per section is obtained with image-impedance operation. The impedance between any junction point in a ladder attenuator and the common ground side of the system is half the image impedance. Used in signal generators and other devices requiring that voltages and currents be reduced in known ratios.

LADDER NETWORK (SERIES-SHUNT NETWORK).

Network made up of series and shunt impedances in alternate succession.

LAEVO-ROTATORY.

Rotating the plane of polarization of a polarized ray of light to the left.

LAG.

1. Time elapsing between the operation of the transmitting device and the response of the receiving device.
2. Displacement in time, expressed in electrical degrees, between two waves of the same frequency.

LAGGING CURRENT.

Current flowing in an inductive circuit. If the circuit contains only inductance, the current lags 90° behind the applied voltage. The characteristics of an inductance causes current changes to occur a short interval of time after corresponding voltage changes.

LAGGING LOAD.

Load that is predominantly inductive, so that the load current lags behind the load voltage. (Reference: INDUCTIVE LOAD.)

LAM (LATIN AMERICAN MISSION).**LAMBDA.**

Greek letter (λ), generally used to designate wavelength in meters.

LAMBERT.

Brightness of a surface reflection one lumen per square centimeter.

LAMINATED.

Made of thin layers.

LAMINATED CONTACT.

Switch contact made up of a number of laminations, each making individual contact with the opposite conducting surface.

LAMINATED CORE.

Iron core for a coil, transformer, armature, etc., built up from laminations stamped from sheet iron or steel. The laminations are more or less insulated from each other by surface oxides and sometimes also by application of varnish. Laminated construction is used to minimize the effect of eddy currents.

LAMINATED RECORD.

Disk composed of several layers of material. Normally used with one thin face on each side of a core.

LAMINATION.

Single stamping sheet material used in building up a laminated object such as the core of a power transformer.

LAMONT'S LAW.

Permeability of steel at any flux density is proportional to the difference between the saturation value of the flux density and its value at the point in question. This law is only approximately accurate and is not true for the initial part of the magnetization curve.

LAMP.

Generic term for an artificial source of light.

BALLAST. Resistance lamp which maintains nearly constant current by increasing in resistance as the current increases.

BUSY. Signal lamp associated with the jack circuits in an attendant's switchboard to indicate that a line is busy.

IDLE TRUNK. Signal lamp associated with an outgoing trunk to indicate that the trunk is not busy.

SWITCHBOARD. Signal lamp wired into associated apparatus to give a visual indication of the status of calls, trunks, subscriber lines, etc. Frequently the cap covering the lamp has coded colors or marks.

TELL TALE. Signal lamp mounted at the top of the protector vertical of the Cook-type main distributing frame as an indication of an operated heat coil.

LAMP BANK.

Arrangement of a number of incandescent lamps, commonly used as a resistance load during electrical tests.

LAMP CAP.

Transparent or translucent cover placed over a signal light and fitted with colors or markings of special meaning.

LAMP CORD.

Twin conductor, either twisted or parallel, in a

size frequently used for connecting floor lamps and other portable electric appliances to wall outlets.

LAMP HOLDER.

Lamp socket.

LAMP RECEPTACLE.

Device intended to support an electric lamp mechanically and connect it electrically to power-line wires.

LAN (LANDING).

To come down and, in most conditions, stop on the earth's surface.

LANAC (LAMINAR NAVIGATION ANTI-COLLISION).

Air and ground radar and beacon equipments with height coding of the aircraft transmitter pulses.

LANCRAB (LANDING CRAFT AND BASES).

LAND.

Record surface between two adjacent grooves.

LAND MOBILE SERVICE.

Mobile service between base stations and land mobile stations or between land mobile stations.

LAND MOBILE STATION.

Mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent.

LAND RETURN.

Radiation that is reflected from the ground (nearby land masses) and is returned to a radar set as an echo. (Reference: GROUND RETURN, GROUND CLUTTER.)

LAND STATION.

Station in the mobile service not intended for operation while in motion. A land station may communicate on a secondary basis with fixed stations or other land stations of the same category.

LANDING BEACON.

Radio transmitter that produces a landing beam for aircraft.

LANDING BEAM.

Highly directive radio signal, projected along a line slanting upward from the landing surface of an airport for use as a guide for aircraft landing under conditions of poor visibility.

LANDING RADAR CONTROL.

Precision radar system of radar approach control engaged only in landing operations.

LANDLINE.

Telegraph or telephone line passing over land, as opposed to submarine cables.

LANDMARK BEACON.

Beacon other than an airport beacon or an airway beacon.

LANGEVIN ION.

Electrified particle in a gas, resulting from accumulation of ions on dust particles or other nuclei.

LANGMUIR DARK SPARK.

Nonluminous region surrounding a negatively charged probe inserted into the positive column of a glow or arc discharge.

LANGUAGE.

1. System consisting of (a) a well defined, usually finite, set of characters; (b) rules for combining characters with one another to form words or other expressions; and (c) a specific assignment of meaning to some of the words or expressions, usually for communicating information or data among a group of people, machines, etc.

2. System similar to the above but without any specific assignment of meanings. Such systems may be distinguished from 1. above, when necessary, by referring to them as formal or uninterpreted languages. Although it is sometimes convenient to study a language independently of any meanings, in all practical cases at least one set of meanings is eventually assigned. (Reference: MACHINE LANGUAGE.)

LANT (ATLANTIC).

LANTOS.

General message originated by the Commander,

Eastern Area, U.S. Coast Guard, to disseminate information to all Coast Guard ocean station vessels in the Atlantic Ocean.

LAP WINDING.

Armature winding in which opposite ends of each coil are connected to adjoining segments of the commutator. The windings thus overlap.

LAPEL MICROPHONE.

Microphone adapted to positioning on the clothing of the user.

LAPPING.

Bringing quartz crystal plates to final frequency by movement with uniform pressure over a flat plate on which has been poured a liquid abrasive mixture.

LARGE POWER MOTOR.

Motor built in a frame having a continuous rating of one hp, open type, at 1,700 to 1,800 rpm, or in a larger frame.

LARGE SCALE MAP.

Map having a scale of 1:100,000 or larger.

LARMOR PRECESSION FREQUENCY.

Value equal to one-half the gyro frequency of ions rotating around the lines of the magnetic field of the earth.

LARYINGAPHONE.

Microphone applied to the throat of a speaker to pick up voice vibrations directly. Valuable in noisy locations because it does not respond to extraneous sound waves.

LASH-UP.

Term used to describe the interconnection of various equipments to perform a function not originally intended for the various equipments.

LASHED CABLE.

Cable fastened to the supporting strand by a continuous spiral steel wire instead of by rings.

LASHING.

Spiral wrapping of wire around a cable and the strand which supports the cable or the tying together of wires in cabling wire harnesses.

LATERAL.

Lateral cable. (Reference: CABLE.)

LATERAL CHROMATIC ABERRATION.

Aberration which affects the sharpness of images off the axis because different colors produce different magnifications.

LATERAL COMPLIANCE.

Ability of a reproducing stylus to move laterally with respect to the record groove while in the reproducing position in a record.

LATERAL RECORDING.

Recording in which the groove modulation is in the plane of the record and along a radius.

LATERAL TELLING.

Communicating air-surveillance information to adjacent organizations of comparable operational level.

LATITUDE.

Angular distance north or south from the earth's equator, measured in degrees, minutes, and seconds from 0° at the equator to 90° at either pole.

ATTICE.

1. Pattern of identifiable intersecting lines of position laid down in fixed positions with respect to the transmitter that establishes it.
2. Arrangement of points in space, representing the relative positions of corresponding atomic, molecular, or ionic centers in the elementary cells or structure units of a crystal.

LATTICE NETWORK.

Electrical network with conventional series elements in each side but with shunt elements extending from one input lead to the opposite output lead.

LATTICE-WOUND COIL.

Coil wound in a crisscross manner to reduce distributed capacitance. (Reference: HONEY-COMB COIL.)

LAUE PATTERN.

Photographic record obtained when X rays from a pinhole or split are sent through a single crystal that diffracts or bends the rays in all directions.

LAUNCHING.

Process of transferring energy from a coaxial cable or shielded paired cable into a waveguide.

LAUNCHING PAD.

Concrete, reinforced emplacement from which rockets and missiles are launched.

LAW OF ELECTRIC CHARGES.

Like charges repel; unlike charges attract.

**LAW OF ELECTROMAGNETIC INDUCTION
(FARADAY'S LAW).**

Electromotive force induced in a circuit is proportional to the time rate of change of the flux of magnetic induction linked with the circuit. When the change in flux linkages is caused by the motion, relative to a magnetic field, of a conductor forming part of an electric circuit, the electromotive force induced in the circuit is proportional to the rate at which the conductor cuts the flux of magnetic induction.

**LAW OF ELECTROSTATIC ATTRACTION
(COULOMB'S LAW).**

Force of attraction or repulsion between two charges of electricity concentrated at two points in an isotropic medium is proportional to the product of their magnitudes and is inversely proportional to the square of the distance between them. The force between unlike charges is an attraction, between like charges a repulsion.

LAW OF MAGNETISM.

Like poles repel; unlike poles attract.

LAW OF REFLECTION.

Angle of reflection is equal to the angle of incidence; the incident ray, reflected ray, and normal, all lie in the same plane.

LAW OF REFRACTION.

When light is passing from a lighter medium to a denser medium, its path is deviated toward the normal; when passing into a less dense medium, its path is deviated away from the normal. The amount of deviation is determined by means of the equation for the index of refraction for the two media involved. (Reference: INDEX OF REFRACTION.)

LAWN MOWER.

Term commonly used in referring to a helix type recorder mechanism.

LAWS OF ELECTRIC NETWORKS.

1. Algebraic sum of the currents flowing toward any point in a network is zero.
2. Algebraic sum of the products of the current and resistance in each of the conductors in any closed path in a network is equal to the algebraic sum of the electromotive forces in that path.

LAY.

Lay of any helical element of a cable is the axial length of a turn of the helix of that element. Among the helical elements of a cable may be each strand in a concentric cable, or each multiple conductor in a multiple-conductor cable.

LAYER.

D. Ionized layer in the D-region. Sky waves normally are not reflected by this layer, but are absorbed by it.

E. Ionized layer in the E-region. The principal layer corresponds roughly to what was formerly called the Kennelly-Heaviside layer. In addition, areas of abnormally intense ionization frequently occur, which are called sporadic E.

F. Ionized layer in the F-region.

SPORADIC E. Ionization which appears at E-layer heights, particularly in the polar regions, at all hours of the day, and which is thought to be caused by particle radiation from the sun.

LAYER WINDING.

Coil-winding method in which adjacent turns are laid evenly side by side along the length of the coil form. Any number of additional layers may be wound over the first, usually with sheets of insulating material between the layers.

LAYOUT.

Diagram indicating the positions of various parts on a chassis or panel.

LAYOUT CREW.

Men who set the stakes for pole locations in pole line construction.

LB (LOCAL BATTERY).

Battery made of single dry cells located at the subscriber's station and distinguished from common battery.

LC.

Product of the inductance and capacitance in a tuned circuit. A value which remains constant for a given frequency.

LC (LEAD COVERED).

Type of wire designation for lead covered cable.

LC PRODUCT.

Inductance L in henrys multiplied by capacitance C in farads.

LC RATIO.

Ratio of L to C; equal to inductance in henrys divided by capacitance in farads.

LD BOARD.

Switchboard used primarily for establishing connections over LD lines.

LD LINE.

Telephone line or channel between two central offices in different exchanges.

LD OFFICE.

Central office primarily arranged for terminating LD lines, switching trunks, recording trunks, and recording completing trunks and for their interconnection with each other.

LD SWITCH TRAIN.

Switch train that carries a connection from an LD board to a user line.

LD SWITCHING CENTER.

LD office that serves as a switching point between local exchanges and the long distance telephone network.

LD SWITCHING TRUNK.

Trunk extending from an LD office to a local central office for connecting LD lines to user lines.

LD TRANSMISSION SELECTOR.

Selector in and LD switch train that furnishes LD grade transmission to the user and controls the ringing.

LEAD.

1. Pole line.
2. Wire to or from a circuit element.
3. Opposite of lag; to precede.

LEAD CELL.

Lead-acid cell.

LEAD SCREW.

1. Threaded rod which leads the cutter or reproducer across the surface of the disk.
2. Threaded shaft used for imparting longitudinal movement to the scanning mechanism or drum.

LEAD-ACID CELL.

Cell in an ordinary storage battery, in which the electrodes are grids of lead containing an active material consisting of certain lead oxides that change in composition during charging and discharging. The electrodes or plates are immersed in an electrolyte of dilute sulphuric acid.

LEAD-COVERED CABLE.

Cable with a lead sheath.

LEAD-IN.

1. Conductor or conductors in an antenna system which complete the electrical path between the elevated portion and the radio equipment.
2. In disk recording, the groove which extends from the outside spiral to the beginning of the sound-carrying grooves.

LEAD-IN INSULATOR.

Insulator inserted in a hole drilled through an outer wall, through which the lead-in wire can be brought into a building.

LEAD-IN SPIRAL.

Blank, spiral groove at the beginning of a record, generally having a pitch that is much greater than that of the recorded grooves.)

LEADER RIBBON.

Flexible ribbon which fastens the air brake to the rope streamer.

LEADING CURRENT.

Current that reaches its maximum value before

the voltage that produces it. A leading current flows in any circuit that is predominantly capacitive.

LEADING LOAD.

Load that is predominantly capacitive, so that its current leads the voltage applied to the load.

LEAKAGE.

1. Electrical loss resulting from poor insulation.
2. Undesired flow of electricity over or through insulators that are used to support or separate the conductors of the circuit.
3. That portion of a magnetic field which is not utilized most effectively. Example: the field appearing at end pieces of an electromagnet.

LEAKAGE CURRENT.

Stray current of relatively small value which flows through or across the surface of solid or liquid insulation when a voltage is impressed across the insulation.

LEAKAGE FLUX.

Magnetic lines of force that do not encircle all the turns in a coil or transformer and hence do not contribute to inductance or to the transfer of energy from one coil to another.

LEAKAGE RADIATION.

In a radio transmitting system, radiation from anything other than the intended radiating system.

LEAKAGE RESISTANCE.

Resistance of the path over which leakage current flows. It is normally a high value.

LEAKANCE.

Reciprocal of insulation resistance.

LEAKS.

Condition where, due to low insulation, current is shunted away from its destination.

LEAKY.

Condition in which the resistance has dropped so much below its normal value that excessive leakage current flows. Usually applied to a capacitor.

LEAKY WAVEGUIDE ANTENNA.

Antenna constructed of a longwave-guide with radiating elements at intervals along its length. It can be made to have a very sharp pattern.

LECHER LINE.

Section of open-wire transmission line used for measurements of standing waves.

LECHER OSCILLATOR.

Device for producing a system of standing waves in two parallel wires called Lecher wires.

LECHER WIRE.

Open, parallel transmission line commonly used in high-frequency measurements; named after E. Lecher.

LECLANCHE CELL.

Primary cell having a carbon positive electrode and a zinc negative electrode in an electrolyte of sal ammoniac and a depolarizer of manganese dioxide. This is the common dry cell.

LEFT-HAND RULE.

1. For motors and generators; stretch the thumb and first finger of the left hand at right angles to each other in the same plane and the second finger at a 90° angle perpendicular to the plane of the thumb and first finger. For a conductor in a generator armature, when the thumb indicates the direction of motion, the first finger indicates the direction of magnetic lines of force, and the second finger indicates the direction of electron flow. For a motor, the right hand is used.
2. For a current-carrying wire, if the fingers of the left hand are closed around the wire so that the thumb points in the direction of electron flow, the fingers will be pointing in the direction of the magnetic field.

LEFT-HAND TAPER.

In a rheostat or potentiometer, the condition in which there is greater resistance in the counter-clockwise half of the operating range of the control (looking from the shaft end) than is in the clockwise half.

LEFT-HANDED ELLIPTICALLY POLARIZED WAVE (COUNTERCLOCKWISE POLARIZED WAVE).

Elliptically polarized transverse electromagnetic wave in which the rotation of the electric intensity vector is counterclockwise for an observer looking in the direction of propagation.

LEFT-HANDED FIXTURE.

Name applied to the X-ray device by which the direction of the natural face of a crystal is determined on Z sections, etc. The device is usually mounted on the left side of the X-ray tube. (Reference: NATURAL FACE FIXTURE.)

LEG, DIAL.

Conductor in a circuit brought out for direct current dial signaling.

LEG, TERMINAL.

Piece of cable which comes with a cable terminal for splicing into the main cable. (Reference: TERMINAL STUB.)

LEGEND.

Table of symbols or other data placed on a map, chart, or diagram to assist in proper interpretation. It does not include the title.

LENARD RAYS.

Cathode rays that emerge from a special vacuum through a thin glass window or thin metallic foil.

LENARD TUBE.

Discharge tube having a thin window at the end opposite the cathode, through which cathode rays can pass into the atmosphere. Used in radiology, where it is also called the cathode-ray tube.

LENGTH OF SCANNING LINE.

1. Length of the path traced by the scanning or recording spot in moving from a point on one line to a corresponding point on the next following line.
2. On drum type equipment, the circumference of the drum. On other types of equipment, the spot speed divided by the scanning line frequency.

LENS.

1. In radio practice, a lens is a structure substantially transparent to radio waves but which inserts a phase delay over the cross section of an aperture to effect a convergence (or divergence) of the radio wave. Such structures may employ dielectrics or metallic configurations.

2. In optics, a lens is a piece of polished optical glass with at least one curved side. The glass is used either to converge or diverge light rays.

LENS DISK.

Television scanning disk having a number of openings arranged in the form of a spiral, with a lens set into each opening.

LENS SPEED.

Lens rating equal to focal length divided by diameter, determining the amount of light a lens will pass.

LENZ'S LAW.

Current induced in a circuit as a result of its motion in a magnetic field is in such a direction as to exert a mechanical force opposing the motion.

LEP (LOWEST EFFECTIVE POWER).**LEPEL DISCHARGER.**

Quenched spark gap used in early radiotelegraph transmitters employing shock excitation.

LEVEL.

Level of a quantity is its magnitude, especially when considered in relation to an arbitrary reference value. Level may be stated in the units in which the quantity itself is measured (example: volts, ohms, etc.) or in units (example: db.) expressing the ratio to a reference value. This word is quite generally used as an abbreviation of "power level". Power level is commonly expressed in decibels above or below a fixed reference level. In communication, one milliwatt is the most common reference level. If this reference level is used, the power is expressed as dbm, the last letter signifying "one milliwatt."

The following will serve to illustrate:

-20 dbm	0.01 milliwatts
-10 "	0.1 "
0 "	1.0 "
+10 dbm	10.0 milliwatts
+20 "	100.0 "
+30 "	1.0 watt

Vertical row of terminals on a selector or connector switch corresponding to digit dialed in an inside telephone plant.

CROSSTALK. Volume of cross-talk energy, measured in db referred to a base.

NOISE. Volume of noise energy, measured in db referred to a base.

SPEECH. Energy of speech or music measured on a volume indicator in Volume Units.

TESTING. Value of power used for reference represented by 0.001 watts working in 600 ohms; abbreviated dbm.

TRANSMISSION. Measured in db of transmission referred to the level at the switchboard termination which is considered, for this purpose, to be zero.

VOLUME. Same as speech level.

LEVEL ABOVE THRESHOLD.

Difference between the intensity level of the sound and the intensity level of the threshold of audibility for that sound. It is expressed in decibels. (Reference: SENSATION LEVEL.)

LEVEL COMPENSATOR.

1. Automatic transmission-regulating feature or device to minimize the effects of variations in amplitude of the received signal.
2. Automatic gain control device used in the receiving equipment of a telegraph circuit.

LEVEL INDICATOR.

Volume indicaor.

LEWIS-LANGMUIR ATOM.

Theory that electrons outside the nucleus of an

atom occupy fixed relative positions in contrast to the orbital electrons in the Bohr atom.

LEYDEN JAR.

Original electric capacitor, consisting of metal foil sheets on the inside and outside of a glass jar that serves as the dielectric.

LF (LOW FREQUENCY).

Any frequency between 30 and 300 kilocycles.

LFM.

VHF fan type marker, low powered (5 watts, not over 10 miles) low range.

LIAISON SECTION.

Non-military personnel who augment the Battle Staff, in a SAGE center, and are responsible for coordination between the air-defense organization and outside agencies.

LICHETNBERG FIGURE.

Pattern traced on a dielectric surface that has been nonuniformly electrified, by sifting over it fine powders such as a mixture of sulphur and red lead.

LIE DETECTOR.

Instrument that indicates or records one or more functional variables of a body, such as blood pressure, heart action, or skin resistance, during questioning, to determine when the person is not telling the truth. Skin resistance drops when a person is lying.

LIFE TEST.

Operation of a device under such a combination of time and conditions as to approximate normal lifetime of use, in order to observe whether changes might occur in actual service and to secure an approximate measure of life expectancy.

LIFTING MAGNET.

Powerful electromagnet used instead of a hook on a crane to lift iron and steel objects by magnetic attraction and release them when the magnetizing current is cut off.

LIGHT.

Radiant energy evaluated according to its capacity to produce visual sensation. The term light

in combination with other terms is sometimes used to denote a device used as a source of luminous energy.

PILOT. Signal to call attention to some condition in a bay or panel of an equipment.

SUPERVISORY. Signal lamp on cord or trunk circuits to call attention to a particular signal which has operated.

LIGHT CHOPPER.

Device for interrupting a light beam. Light choppers are frequently used to facilitate amplification of the output of a phototube on which the beam impinges.

LIGHT FIGURE.

Rectangular geometrical figure observed when an etched flat surface of quartz is placed over a pin-point source of light. The effect is due to the reflection of light from microscopic, regularly shaped etch pits produced by the action of the acid.

LIGHT FLUX.

Rate of emission of visible radiation, especially as judged by its visual effect. The quantity of light emitted from a light source. (Reference; LUMINOUS FLUX.)

LIGHT GUN.

Photoelectric cell in a gun-type case. The gun is used by operators to take specific actions in assisting and directing computer operations.

LIGHT LOAD.

Load that is only a small portion of that which the device is designed to handle.

LIGHT LOADING AREA.

Territory in which the loading caused by sleet, ice, or wind does not exceed eight pounds per square foot.

LIGHT MICROSECOND.

Distance over which light travels in free space in one microsecond. This distance is employed as a unit for expressing electrical distance.

LIGHT MODULATION.

Method of introducing the carrier by periodic

variation of the scanner light beam, the average amplitude of which is varied by the density changes of the subject copy.

LIGHT NEGATIVE.

Having negative photoconductivity, hence decreasing in conductivity under the action of light.

LIGHT POSITIVE.

Having positive photoconductivity; selenium ordinarily has this property.

LIGHT QUANTUM.

Both invisible and visible light consist of quanta of energy that move as if guided by waves.

LIGHT RAY.

Beam of light having a small cross section.

LIGHT RELAY.

Photoelectric device that closes a relay in response to a change in the intensity of a beam of light.

LIGHT YEAR.

Distance traveled by light in one year. Light travels at the rate of 186,000 miles per second, the theoretical limit to attainable speed in the Universe. Light Year is equal to 5,880,000,000,000 miles.

LIGHT-SENSITIVE.

Exhibiting a photoelectric effect when irradiated, such as photoelectric emission, photoconductivity, or photovoltaic action. (Reference: PHOTOSENSITIVE.)

LIGHT-SENSITIVE TUBE.

Vacuum tube that changes its electrical characteristics with illumination. (Reference: PHOTOTUBE.)

LIGHT-VALVE.

Device which varies the intensity of the light beam passing through it in accordance with a modulating signal. Example: Galvanometer acting to control the passage of light.

LIGHTER CHOPPER.

Mechanical device which interrupts the light beam in the scanner of a facsimile transmitter at

a regular rate. This method is sometimes used to generate the carrier frequency for a facsimile signal.

LIGHTENING BRANCH CIRCUITS.

Circuits supplying energy to lighting outlets only.

LIGHTHOUSE TUBE.

Popular designation for an ultra-high frequency electron tube shaped like the familiar lighthouse having disc seal planer elements.

LIGHTING FEEDER.

Feeder supplying principally a lighting load.

LIGHTING OUTLET.

Outlet intended for the direct connection of a lamp holder, a lighting fixture, or a pendant cord terminating in a lamp holder.

LIGHTING.

1. Electric discharge occurring in the atmosphere, one terminal of which is a cloud.
2. NATO Telephone Precedence Designation.

LIGHTNING ARRESTER.

Device, usually containing spark gaps, which allows currents induced by lightning to flow to earth without damaging electrical equipment.

LIGHTNING GENERATOR.

Surge generator or impulse generator used to produce high-voltage surges for testing insulators and for other purposes.

LIGHTNING ROD.

Rod projecting above the highest point on a structure and connected to ground in such a way that it can carry a lightning discharge to ground.

LIGHTNING SURGE.

Transient electric disturbance in an electric circuit caused by lightning.

LIGHTNING SWITCH.

Switch provided to connect a radio antenna to ground during lightning storms.

LIMIT RATIO.

Ratio of peak value to limited value, or comparison of such ratios.

LIMIT SWITCH.

Device designed to cut off power automatically at or near the limit of travel of any moving object actuated by electrical means.

LIMITED STANDARD.

Type classification of equipment. An item in stock which is not as satisfactory as either standard or substitute standard items, but which is usable in place thereof.

LIMITER.

1. Device in which some characteristic of the output is automatically prevented from exceeding a predetermined value; a transducer in which the output amplitude is substantially linear with regard to the input up to a predetermined value and substantially constant thereafter.

2. Stage or circuit commonly used in FM receivers that limits the amplitude of the signals to some predetermined maximum. In so doing, it limits interfering noise by removing excessive amplitude variations from signals. Limiters are also used in television and industrial electronic apparatus.

Note. A limiter may be used to remove amplitude modulation while transmitting angle modulation.

LIMITING.

Removal by electronic means of one or both extremities of a waveform at a predetermined level.

LINCOLN.

Formerly used to refer to a semi-automatic system for the processing of data and weapon control in air defense operations. Lincoln Transition System was the official term. This system is now known as SAGE, and the use of the term Lincoln Transition is no longer approved. The term came into use because Lincoln Laboratories were largely responsible for the development of the system.

LINDEMANN GLASS.

Lithium borateberyllium oxide glass having no element higher in atomic number than oxygen, used as window material for low-voltage X-ray tubes because it will pass X-rays of extremely long wave length, such as Grenze rays.

LINE.

1. Conductor or set of conductors and their supporting structure from a subscriber to a central office or between central offices.
2. Pole lines, the supporting structure exclusive of conductors.
3. Conductors and circuit apparatus used in a particular channel.
4. Communication channel without regard to how it is derived.
5. In cryptography, a horizontal sequence of symbols or groups thereof.

ARTIFICIAL. Circuit made up of lumped constants, which is used to simulate various characteristics of a transmission line.

CABLE. Pole line used to support cables.

MAGNETO. Subscriber's line in which talking current is furnished by local batteries and signaling to the switchboard is accomplished by a magneto associated with the subscriber's set.

OPEN WIRE. Overhead telephone or telegraph line having each wire separately supported by insulators.

PBX TIE. Line or circuit between two PBX's over which stations of one PBX may be connected to stations of the other.

POLE. Series of poles, in a line, used to support cable or wire.

POWER. Pole line carrying power wires or cables.

PRIVATE. Line, channel, or service rented for private use.

RURAL. Pole line in rural or suburban areas usually carrying multiparty circuits.

SUBSCRIBER. Line from a customer's premises or private branch exchange to a central office.

TELEGRAPH. Line for passing telegraph or teletypewriter signals.

TOLL. Line or communication system between offices in different exchange areas. If a single circuit is meant, toll circuit is better usage.

LINE ADVANCE

Center-to-center distance between scanning lines.

LINE AMPLIFIER.

Amplifier, common to all channels in one direction, used to compensate for line loss. Normally associated directly with the line.

LINE BALANCE.

1. Degree of similarity of the two conductors of a transmission line. Improved accuracy of balance reduces pickup of extraneous disturbance of all kinds including crosstalk.

2. Matching impedance, equaling the impedance of the line at all frequencies, that is used to terminate a two-wire line.

LINE CIRCUIT.

Relay equipment associated with each station connected to dial or manual switchboard. This term also applies to a circuit to interconnect an individual telephone and a channel terminal.

LINE COMMUNICATION.

Used for communication purposes of a physical path, such as wire or waveguide, between terminals.

LINE COORDINATE.

Symbol normally at the side of a matrix identifying a specific row of cells and, in conjunction with a column coordinate, a specific cell in the matrix.

LINE CORD.

Two-wire cord terminating in a two-prong plug at one end and connected permanently to a radio receiver or other appliance at the other end; used to make connections to a source of power.

LINE DROP.

Voltage drop, existing between two points on a power line or transmission line, due to the resistance, reactance, or leakage of the line.

LINE DROP SIGNAL.

Signal associated with a subscriber line on a manual switchboard.

LINE EQUALIZER.

Inductance and/or capacitance inserted in a transmission line to correct the frequency-response characteristics of the line.

LINE EQUIPMENT BALANCING NETWORK.

Hybrid balancing network which is designed to balance equipment such as filters, composite sets, and other line equipment.

LINE FEED.

(Reference: LINE ADVANCE.)

LINE FEED PATTERN.

Pattern in the recorded copy caused by an irregular line advance. In photographic recording, an extremely small variation in the line advance is readily noticeable.

LINE FILL.

Ratio of the number of connected telephone stations on a line to the nominal station capacity of that line.

LINE FILTER.

1. Expression having no universal significance other than a literal interpretation of the words, a filter associated with a line. In some specifications, it may imply an ability to separate the physical speech circuit spectrum from the carrier spectrums; in others it may imply directional separation, etc.

2. Device inserted between a receiver or other appliance and the power line to prevent passage of noise signals. It contains one or more inductors and capacitors. It is used with a radio receiver to prevent power-line noise signals from entering the receiver, and is used with other appliances to prevent their own electrical noises from entering the power line.

LINE FILTER BALANCE.

Network designed to maintain phantom group balance when one side of the group is equipped with a carrier system. Since it must balance the phantom group only for voice frequencies, its

configuration is quite simple compared to the filter which it balances.

LINE FLYBACK.

In a television system, the right-to-left return motion from the end of one scanning line to the beginning of the next. (Reference: HORIZONTAL RETRACE.)

LINE FREQUENCY.

In television, the line frequency is the number of times per second that a fixed vertical line in the picture is crossed in one direction by the scanning spot. Scanning during vertical return intervals is counted.

LINE IMPEDANCE.

Impedance measured across the terminals of a transmission line.

LINE INTEGRAL.

Line integral between points on a given straight or curved line in the region occupied by a vector field is the definite integral of the product of a line element by that component of the vector which is tangent to that element. Thus, the magnetomotive force along a line connecting two points in a magnetic field is the line integral of the magnetic intensity.

LINE ITEM.

Complete descriptive entry on any document, including quantity, unit of issue, stock or part number, and description of the item involved.

LINE LAMP.

Switchboard lamp for indicating an incoming line signal.

LINE LEAKAGE.

Resistance existing through the insulation between the two wires of any telephone line loop.

LINE LENGTHENER.

Device for altering the electrical length of a waveguide or transmission line without altering other electrical characteristics, or the physical length.

LINE LEVEL.

Signal level in decibels at a particular position on a transmission line.

LINE LOOP.

Portion of a telephone circuit that includes a user's telephone set and the pair of wires that connect it with the distributing frame of a central office.

LINE LOOP RESISTANCE.

Metallic resistance of the line wires that extend from an individual telephone set to the dial central office.

LINE LOSS.

Total of the various energy losses occurring in a transmission line.

LINE MICROPHONE.

Directional microphone employing a linear array of continuous or spaced microphones or pick-up elements.

LINE NOISE.

Noise originating in a transmission line.

LINE OF FORCE.

Imaginary line in an electric or magnetic field, coinciding in direction with the field intensity at each point. When used as a unit of magnetic flux, a line of force is sometimes called a Maxwell.

LINE OF POSITION.

Line along the surface of the earth defined by some characteristic of a navigational aid or technique.

LINE OF PROPAGATION.

Path or line of travel of a radio wave in space.

LINE OF SIGHT.

1. Distance to the horizon from an elevated point including the effects of atmospheric refraction. The line-of-sight distance for an antenna at zero height is zero distance.
2. Line of vision.
3. Straight line between an observer or radar antenna and a target.
4. Unobstructed or optical path between two points. Also used to describe a microwave radio propagation characteristic.

LINE OF TRAVEL.

Path followed by an electromagnetic wave from one point to another.

LINE PRIMARY SWITCH.

Switch which, under control of the alloter, seizes the calling line and extends the line to the local first selector switch.

LINE PULSING.

Method of pulsing a transmitter in which an artificial line is charged over a relatively long period of time and then discharged through the transmitter tubes in a short interval determined by the line characteristics.

LINE RELAY.

Relay which is controlled over a subscriber line or trunk line.

LINE ROUTE/ROUTE DIAGRAM MAP.

Map or overlay for signal communication operations that shows the actual routes and type of construction of wire circuits in the field.

LINE SPECTRUM.

Atomic spectrum, characterized by distinct lines, rather than by bands as in molecular spectra.

LINE STRETCHER.

Impedance matching device for coaxial transmission lines.

LINE SWITCH.

1. Switch attached to a subscriber line, which connects an originating call to an idle part of the switching apparatus.
2. Switch used to connect or disconnect the line voltage from a piece of electronic equipment.

LINE TREND.

Direction of the construction of an open-wire, pole line from the superior to the subordinate headquarters, or from the lower to the higher numbered pole.

LINE UNIT.

Electric control device which is used to send, receive, and control the impulses of a teletypewriter.

LINE VOLTAGE.

Voltage level of main power supply to equipment.

LINE-BALANCE CONVERTER

Device used at the end of a coaxial line to isolate the outer conductor from ground.

LINE-CORD RESISTOR.

Asbestos-inclosed wire-wound resistance element incorporated in a line cord along with the two regular wires. The resistance serves to lower the line voltage to the correct value for the series-connected tube filaments and pilot lamps of a universal ac/dc receiver.

LINE-OF-SIGHT COVERAGE.

Distance to which transmission at frequencies above the maximum usable high frequency is normally limited since radio waves at those frequencies do not follow the curvature of the earth and are not reflected from the ionosphere.

LINE-OF-SIGHT STABILIZATION.

Method of compensating for roll and pitch of the vessel or aircraft by changing the elevation of the spinner in order to keep the radar beam pointed at the horizon.

LINE-STABILIZED OSCILLATOR.

Oscillator in which a section of line is used as a sharply selective circuit element for the purpose of controlling the frequency.

LINE-VOLTAGE REGULATOR.

Device that counteracts variations in power-line voltage, and delivers an essentially constant voltage to the connected load.

LINEAR.

Having an output which varies in direct proportion to the input.

LINEAR ACCELERATOR.

High-voltage atom smasher.

LINEAR AMPLIFICATION.

Vacuum-tube amplification in which changes in plate current are directly proportional to changes in the applied grid voltage.

LINEAR AMPLIFIER.

Amplifier that develops an output directly proportional in amplitude to that of the input signal; for example, a class B amplifier. Usually,

the term linear amplifier is used in connection with tuned amplifiers.

LINEAR ARRAY.

Antenna array whose elements are spaced along a straight line.

LINEAR CONTROL.

Rheostat or potentiometer having uniform distribution of graduated resistance along the entire length of its resistance element.

LINEAR DETECTION.

Detection in which the output voltage is substantially proportional, over the useful range of the detecting device, to the voltage of the input wave.

LINEAR DETECTOR.

Detector that produces an AF output signal directly proportional in amplitude to the variations of the RF input. In an AM transmission, the amplitude of the RF wave varies, and in an FM transmission, the frequency varies.

LINEAR DISTORTION.

Amplitude distortion wherein the output signal envelope is not proportional to the input signal envelope but no alien frequencies are involved.

LINEAR ELECTRICAL CONSTANTS OF A UNIFORM LINE.

Series resistance, series inductance, shunt conductance, and shunt capacitance per unit length of line.

LINEAR ELECTRICAL PARAMETERS OF A UNIFORM LINE.

Series resistance, series inductance, shunt conductance and shunt capacitance per unit length of line. (The term "constant" is frequently used instead of "parameter.")

LINEAR LIGHT.

Luminous signal having perceptible length.

LINEAR MODULATION.

Modulation in which the amplitude of the modulation envelope (or the deviation from the resting frequency) is directly proportional to the amplitude of the sound wave at all audio frequencies.

LINEAR RECTIFICATION.

Process of operation on a wave which produces a variation of rectified current or voltage proportional to variations of the input-wave amplitude, over a wide range of input-wave amplitude.

LINEAR RECTIFIER.

Rectifier, the output current or voltage of which contains a wave having a form identical with that of an envelope of an impressed signal wave.

LINEAR SCAN.

Radar beam which traverses one arc or circle only.

LINEAR SCANNING.

Scanning in which a radar beam generates only one arc or circle.

LINEAR SWEEP.

Periodic voltage, applied to the horizontal deflecting plates of the cathode-ray tube, which increases linearly with time up to a maximum value and then falls abruptly to zero. This causes the spot to sweep across the screen at a uniform velocity.

LINEAR TIME BASE.

Time base on a cathode-ray tube in which the spot moves at a constant speed, in the direction of the time scale, during the useful part of the time base. This type of time base produced by the application of a sawtooth waveform to the horizontal-deflection plates of a cathode-ray tube.

LINEAR TRANSDUCER.

Transducer for which the pertinent measures of all the waves concerned are linearly related.

LINEAR-LOGARITHMIC INTERMEDIATE-FREQUENCY AMPLIFIER.

Amplifier used to avoid overload or saturation as a protection against jamming in a radar receiver.

LINEARITY CONTROL.

Control provided in electronic television systems to adjust the shapes of scanning waves.

LINEARLY POLARIZED WAVE.

At a point in a homogeneous, isotropic medium,

a transverse electromagnetic wave whose electric field vector at all times lies along a fixed line.

LINEFINDER.

Switching mechanism which finds a calling line out of a group and connects it to a trunk, to a selector, or to a connector.

LINEFINDER SHELF.

Usually consists of 20 linefinders with the equipment required for connecting any of its associated calling telephones to a selector or connector which will receive the dial pulses from the calling telephone.

LINEFINDER SWITCH.

Automatic switch for seizing selector apparatus which provides dial tone to the calling party.

LINES OF COMMUNICATION.

All land, water, and air routes, which connect an operating military force with a base of operations, and along which supplies and reinforcements move.

LINES, REFERENCES.

Lines drawn between the floor markers from which the office equipment is located on the floor plans.

LINESWITCH, SECONDARY.

Second lineswitch inserted between the subscriber lineswitch and the first selector to give each subscriber a choice of a large number of outlets.

LINK.

1. Indicates the existence of communication facilities between two points.
2. (Radio) Transmitter-receiver system connecting two locations.
3. (Telephone Trunking) Consists of the equipment required to complete one call through an automatic dial system. Number of links required for a specific system depends upon the amount of traffic (average number of simultaneous calls and average duration). Number of links required is usually equal to 10-15 percent of the number of equipped lines in the system. On step by step systems the amount of linkage is also called "Percent Trunking."

4. In dial central offices, a complete talking path.
5. Combination of switches to accomplish that path, such as a linefinder and connector tied together.
6. Radio link which transmits synchronized video, trigger, and scan data to remote decoder and repeater.

LINK CIRCUIT.

Closed loop used for coupling purposes. It generally consists of two coils, each having a few turns of wire, connected by a twisted pair of wires or by other means, with each coil placed over, near, or in one of the two coils that are to be coupled.

LINK COUPLING.

Use of a link circuit to provide coupling between the coils of separate circuits.

LINK GROUP.

Links that employ the same multiplex terminal equipments.

LINKAGE

1. Measure of the interlocking of magnetic flux with an electric circuit. It is the product of the flux by the number of turns linked by the flux, and is a measure of the voltage that will be induced in the circuit.
2. Mechanical linkage is an arrangement of solid pieces connected by movable joints, used to transfer motion in a desired manner.

LIP MICROPHONE

Microphone adapted for use in contact with the lip.

LIQUID FUSE UNIT.

Fuse unit in which the fuse link is immersed in a liquid, or in which provision is made for drawing the arc into the liquid when the fuse link melts.

LIQUID RHEOSTAT.

Rheostat consisting of metal plates immersed in a conducting liquid. The resistance is changed by varying the area of the plates in contact with

the liquid, either by raising and lowering the plates or by altering the liquid level with a pump or otherwise.

LISSAJOUS CURVES.

Family of plane curves described by a point having two simple harmonic motions at right angles. Different curves are obtained by varying the relations between amplitude, frequency, and phase of the two motions. Widely used for frequency comparison by means of cathode-ray oscilloscopes.

LISSAJOUS FIGURES.

Patterns produced on the screen of a cathode-ray tube by combination of sine wave signal voltages of various amplitude and phase relations, or horizontal and vertical deflection plates.

LISSAJOUS PATTERN.

Pattern generated by a point simultaneously executing harmonic motion in both the vertical and horizontal directions; in electronics, the pattern appearing on an oscilloscope when sine waves are applied simultaneously to both the horizontal and vertical deflecting plates.

LISTENING WATCH.

In radio communication, a continuous receiver watch established for the reception of the traffic addressed to, or of interest to, own unit with complete log optional.

LISTS.

(Reference: DRAWING AND LISTS.)

LITERAL KEY.

A key sequence in letter form.

LITHIUM.

Alkali metal having characteristics similar to those of sodium, sometimes used on the cathodes of phototubes because it gives high response at the extreme violet end of the light spectrum.

LITTLE ABNER.

Lightweight AN/TPS-10 beaver tail type, radar height finder. It operates in the three CM band and uses a very narrow beam for vertical scanning, thus obtaining an accurate indication of the height of a target. The set may be installed on

the ground or on a tower. A larger height finder, the AN/CPS-4, is known as the BIG ABNER. The AN/TPS-10 has a range of 60 miles and a peak power of 80 Kilowatts.

LITZ WIRE.

Wire made up from a number of fine separately insulated strands woven together in such a way that each strand successively takes up all possible positions in the cross section of the entire conductor. It gives reduced skin effect and hence lower resistance to high-frequency currents. The full name is Litzendraht wire.

LIVE.

Term applied to a circuit that is connected to a voltage source.

LIVE CABLE TEST CAP.

Protective structure at the end of a cable which insulates the conductors and seals the cable sheath.

LIVE END.

End of a radio studio which gives the greater reflection of sound.

LIVE ROOM.

Room which is characterized by an unusually small amount of sound absorption.

LMM.

Compass locator station when combined with middle marker of the ILS (CAA).

LN (LIAISON).

Contact or intercommunication maintained between different military units, levels of command, agencies, offices, departments, or the like to assure cooperation and unity of purpose in working toward a common goal.

L.O. INJECTION.

Adjustment used to vary the magnitude of the local oscillator signal that is coupled into the mixer.

LO. (LOCAL OSCILLATOR, LUBRICATION ORDER).

(Reference: LOCAL OSCILLATOR.)

LOAD.

1. Power consumed by a machine or circuit in performing its function.
2. Resistor or other impedance which can replace some circuit element temporarily or permanently removed.
3. Power that a machine or apparatus delivers.
4. Device used to absorb power and convert it into the desired useful form.
5. Impedance to which energy is being supplied.
6. Power-consuming device connected to a circuit. One use of the word load is to denote a resistor or other impedance which replaces some circuit element temporarily or permanently removed. If a filter is disconnected from the termination to which it ordinarily delivers signals, it may be artificially terminated in an impedance which simulates that normal termination. The substituted artificial termination is then called a load or dummy load. Another meaning of load is that of aggregate power level. Frequently that total level is called the aggregate load.

ARTIFICIAL. Dissipative but essentially nonradiating device having the impedance characteristics of an antenna, transmission line or other practical utilization circuit.

ELECTRICAL. Device or circuit component into which power is intended to be delivered by an amplifier, generator, etc.; comprises resistive and/or reactive components.

LOAD CIRCUIT.

Complete circuit required to transfer power from source such as an electron tube to a load.

LOAD CIRCUIT EFFICIENCY.

Ratio of useful power delivered by the load circuit to the load and the load circuit power input.

LOAD DIVIDER.

Unit for distributing power to various units.

LOAD IMPEDANCE.

Impedance presented by the load.

LOAD LINE.

Straight line drawn across a series of plate current-plate voltage characteristic curves on a graph to show how plate current will change with grid voltage when a specified plate load resistance is used.

**LOAD LOSSES OF TRANSFORMER
(IMPEDANCE LOSSES OF TRANSFORMER).**

Losses in a transformer which are incident to the carrying of load.

Note. Load losses include I^2R loss in the windings due to load current, stray loss due to stray fluxes in the windings, core clamps, etc., and to circulating currents, if any, in parallel windings.

LOAD REGULATOR.

Regulator which functions to maintain load as designated at a predetermined value or to vary it according to a predetermined plan.

LOAD SET.

Adjustment of load relay.

LOADED ANTENNA.

One provided with extra inductance or capacitance in order to change its electrical length.

LOADED IMPEDANCE.

Of a transducer, the impedance at the input of the transducer when the output is connected to its normal load.

LOADED LINE.

Wire line in which loading coils have been inserted at regular intervals in order to reduce attenuation and phase lag at the frequencies within the band used.

LOADED Q.

Loaded Q of an electric impedance is the value of Q of such impedance when coupled or connected under working conditions.

LOADING.

1. Most commonly used to designate the introduction of inductors in a transmission line (Reference: CARRIER LOADING.)
2. System of adding inductance units to a circuit to improve circuit operation characteristics.

3. Amount of wind pressure and ice which must be assumed in certain areas.

4. Insertion of reactance in a circuit for the purpose of improving its transmission characteristics in a given frequency band. The term is commonly applied, in wire communication practice, to the insertion of loading coils in series in a transmission line at uniform intervals and in radio practice, to the insertion of one or more loading coils anywhere in a transmission circuit.

LOADING COIL.

1. Inductor inserted in a circuit to increase its inductance for the purpose of improving its transmission characteristics in a given frequency band.

2. (Radio) Coil that does not provide coupling with any other circuit, but is inserted in a circuit to increase the inductance.

3. Coils of wire around a magnetically permeable core constituting inductance which can be inserted in a circuit at regular intervals to improve transmission without providing coupling with another circuit.

4. (Wire Communications) Coil used in coil loading. Coil used to add inductance to a transmission line for the purpose of decreasing power losses and providing equal response to a given frequency range. Loading coils are inserted at equal distances along a transmission line.

LOADING COIL SPACING.

Line distance between the successive loading coils of a coil-loaded line.

LOADING COIL SPRING.

Line distance between the successive loading coils of a coil-loaded line.

LOADING FIXTURE.

Pole structure that has been reinforced to carry the weight of heavy load coils in iron or steel cases.

LOADING POINT.

In amphibious operation, any location where ships or landing vessels are loaded with personnel, supplies, and equipment.

LOAF CRYSTAL.

Series of blanks cemented together in parallel position for edge lapping. (Reference: STACK.)

LOBE.

1. With reference to radiation patterns of antennas, a portion of the directional pattern bounded by one or two cones of nulls. Its size and shape are determined by plotting the signal strength in various directions. The area with the greatest signal strength is known as the major lobe.

2. In connection with the radar coverage indicator, it is the pivoted plastic overlay representing the radiation pattern of the radar antenna.

MAJOR. Lobe containing the direction of maximum radiation or reception.

MINOR. Any lobe except the major lobe.

LOBE FREQUENCY.

Number of times a lobing pattern is repeated per second.

LOBE PENETRATING.

Detection of a target which is not subjected to screening.

LOBE SWITCHING.

Similar to conical scan, except the beam is switched rapidly back and forth between two positions a few degrees apart.

LOC (LINE OF COMMUNICATION).

Land, air, or water route connecting a military force in the field with its supplying source or base of operations, and along which supplies and reinforcements move. A line by which telephonic or other electronic messages are transmitted, wire or wireless communication.

LOCAL ACTION.

In a battery, the loss of otherwise usable chemical energy by currents which flow within the cell or battery regardless of its connections to an external circuit.

LOCAL AIR DEFENSE.

Air-defense of a specific target usually by means of antiaircraft weapons.

LOCAL BATTERY.

Battery made of single dry cells located at the subscriber's station and distinguished from common battery.

LOCAL BATTERY TALKING—COMMON BATTERY SIGNAL TELEPHONE SET.

Local battery telephone set in which current for signaling by the telephone station is supplied from a centralized direct-current power source.

LOCAL BATTERY TELEPHONE SET.

Telephone set for which the transmitter current is supplied from a battery, or other current supply circuit, individual to the telephone set. The signaling current may be supplied from a local hand generator or from a centralized power source.

LOCAL BATTERY TELEPHONE SYSTEM.

Telephone system in which the current for talking is supplied at each telephone.

LOCAL CALL.

Any call for a destination within the local service area of the calling station.

LOCAL CENTRAL OFFICE.

Central office arranged for terminating subscriber lines and provided with trunks for establishing connections to and from other central offices.

LOCAL CONTROL.

System or method of radio-transmitter control whereby the control functions are performed directly at the transmitter.

LOCAL INDICATOR.

Radar operator's indicator as contrasted to the remote indicator for the pilot or navigator.

LOCAL LOOP.

Circuit connecting an end instrument to a switching facility or distribution point.

LOCAL MANUAL FIRE ALARM SYSTEM—GENERAL ALARM TYPE.

Local fire alarm system in which the alarm signal is sounded on all sounding devices installed.

LOCAL MANUAL FIRE ALARM SYSTEM-PRESIGNAL TYPE.

Local fire alarm system in which the initial alarm signal is sounded by selected sounding devices, with provision for the subsequent sounding of a general alarm at the option of those responsible for system operation.

LOCAL OSCILLATOR.

1. Oscillator, within the receiving equipment, used for generating oscillations which are combined with the incoming signal, as in best reception.
2. Oscillator in a superheterodyne circuit whose output is mixed with the received signal to produce a sum or difference frequency equal to the intermediate frequency of a receiver.

LOCAL PROGRAM.

Program originating at and released through only one broadcast station.

LOCAL SERVICE AREA.

Area within which are located the stations which a customer may call at rates in accordance with the local tariff.

LOCAL SYSTEM.

In protective signaling, a local system is a system in which the alarm or supervisory signal is sounded, as by a gong, horn, or whistle, locally at the protected premises.

LOCAL TIME.

Time referred to the longitude of the observer. The hours begin at local midnight and continue through 24 hours of the day.

LOCAL TRUNK.

Trunk between local and long-distance switchboards, or between local and PBX switchboards.

LOCALIZER.

Directional radio beacon which provides to an aircraft an indication of its lateral position relative to a specific runway. (Reference: INSTRUMENT LANDING SYSTEM.)

LOCALIZER STATION.

Radionavigation land station in the aeronautical radio-navigation service which provides signals

for the lateral guidance of aircraft with respect to a runway center line.

LOCK.

To couple two or more systems so that the recurrence frequency in one system is constrained to be equal to or a multiple or submultiple of the recurrence frequency in the other.

LOCK-OUT.

1. In a telephone circuit controlled by two voice-operated devices, the inability of one or both subscribers to get through, either because of excessive local circuit noise or continuous speech from either or both subscribers.
2. In Mobile Communications, an arrangement of control circuits whereby only one receiver can feed the system at one time to avoid distortion. (Reference: RECEIVER LOCKOUT SYSTEM.)

LOCKBREAKING.

Act of transferring the tracking beam or range gate from the dispensing aircraft to the dispensed chaff.

LOCKED GROOVE.

Concentric, blank groove at the end of modulated grooves whose function is to prevent further travel of the reproducer.

LOCKED ROTOR TORQUE (STATIC TORQUE).

Torque required to start a motor from a stopped position when rated voltage is applied.

LOCKING.

1. Controlling the frequency of an oscillator by means of an applied signal of constant frequency.
2. Automatic following of a target by a radar antenna.

LOCKING RELAY.

Relay which renders some other relay or device inoperative under predetermined conditions.

LOCKING-IN.

Shifting and automatic holding of one or both of the frequencies of two oscillating systems which are coupled together, so that the two frequencies have the ratio of two integral numbers.

LOCTAL.

Alternative spelling of loktal; a type of tube base.

LODAR.

1. Trade name for a technique which uses an underwater device that emits pulsed supersonic waves in a horizontal plane. The sound waves reach their target and return to their originating point as echos. The returned echos are processed to provide information on the type of object, its distance, and its size. Process can be compared to radar, except signal is transmitted by water instead of air, and the signals are at supersonic frequencies rather than radio frequencies.

2. Direction finder which compensates for night effect by observing the separately distinguishable ground and sky wave Loran signals on a cathode ray oscilloscope and positioning a loop antenna so as to obtain a null indication of the components selected to be more suitable.

LODESTONE.

Mineral consisting chiefly of a magnetic oxide of iron that is found in its natural state in a magnetized condition.

LOFTIN-WHITE CIRCUIT.

Type of direct-coupled amplifier circuit.

LOG.

1. Symbol for the logarithm of a number to the base 2.718, designated as e and used in the natural system of logarithms.

2. List of radio stations with their frequencies, power, location, and other data.

3. Record of the station with which a radio station has been in communication. Amateur radio operators, as well as all commercial operators, are required by law to keep this log.

4. At a broadcast station, detailed record of the program broadcast by the station at all times.

5. At a broadcasting transmitter, a record of the meter readings and other measurements that are required by law to be taken at regular intervals.

6. Written record of radio station operations as required by law.

7. Report in record form.

AUTOMATIC TELECOMMUNICATION. Record of the activities of an aeronautical telecommunication station recorded by electrical or mechanical means.

OPERATOR'S. Chronological record of events relating to the operation of a particular circuit.

STATION. Chronological record of station events i.e., entries relating to message handling, equipment difficulties, personnel, etc.

LOG⁻¹.

Symbol for antilogarithm, read, "the number whose logarithm is."

LOG₁₀.

Symbol for the logarithm of a number of the base 10, which is the common system of logarithms. Whenever the abbreviation log appears alone (without 10), the base 10 is implied.

LOG ANCHOR.

Anchor made of a log, split log, or two split logs crossed.

LOGARITHMIC CURVE.

Curve in which one coordinate of any point on it varies in accordance with the logarithm of the other coordinate.

LOGARITHMIC DECREMENT.

Napierian logarithm of the ratio of the first to the second of two successive amplitudes of the same sign for an exponentially damped alternating current.

LOGARITHMIC HORN.

Horn whose diameter varies with length according to a logarithmic law.

LOGARITHMIC SCALE.

Scale calibrated so that distances from the zero of the scale are proportional to the logarithms of the numbers with which these points on the scale are labeled.

LOGCOM (AMC LOGISTIC TRANSCIVER NETWORK).

Includes all data transceiver communications facilities, and stations of all AMC activities worldwide. It also includes those bases of other major air commands operating their transceiver stations in conjunction with the AMC LOGCOM network.

LOGGING.

Making a written record of essential data.

LOGIC.

(Reference: LOGICAL DESIGN.)

LOGICAL DESIGN.

1. Planning of a computer or data-processing system prior to its detailed engineering design.
2. Synthesizing of a network of Logical Elements to perform a specified function.
3. Result of 1. and 2. above, frequently called the Logic of the system, machine, or network.

LOGICAL DIAGRAM.

In Logical Design, a diagram representing the logical elements and their interconnections without necessarily expressing construction or engineering details.

LOGICAL ELEMENT.

In a computer or data-processing system, the smallest building blocks which can be represented by operators in an appropriate system of symbolic logic. Typical logical elements are the and-gate and the flip-flop, which can be represented as operators in a suitable symbolic logic.

LOGICAL OPERATION.

1. Nonarithmetical operation. Examples: extract, logical (bit-wise) multiplication, jump, data transfer, etc.
2. Sometimes, only those nonarithmetical operations which are expressible bit-wise in terms of the propositional calculus or a two-value Boolean algebra.

LOGICAL SYMOL.

Symbol used to represent a logical element graphically.

LOGISTIC IMPLICATIONS TEST.

Analysis of the major logistic aspects of a joint strategic war plan and the consideration of the logistic implications resultant therefrom as they may limit the acceptability of the plan. The logistic analysis and consideration are conducted concurrently with the development of the strategic plan. The objective is to establish whether the logistic requirements generated by the plan are in balance with availabilities and to set forth those logistic implications which should be weighed by the Joint Chiefs of Staff in their consideration of the plan.

LOGISTICAL ESTIMATE OF THE SITUATION.

Element of the estimate of the situation which expresses the influence of logistical factors on the contemplated courses of action. The influence may be of such importance on certain courses of action as to cause their abandonment in favor of others.

LOGISTICS.

Aspects of military operations which deal with (a) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; (b) movement, evacuation, and hospitalization of personnel; (c) acquisition or construction, maintenance, operation, and disposition of facilities; and (d) acquisition or furnishing of services. It comprises both planning, including determination of requirements and implementation.

LOGS.

Reports, in record form, of routine or trouble activities, usually in narrative format.

LOKI.

Surface-to-air missile developed for the Army. It is powered by a solid-propellant rocket motor.

LOKTAL BASE.

Special base for small vacuum tubes, so designed that it locks the tube firmly in a corresponding special eight-pin loktal socket. The tube pins are sealed directly into the glass envelope. Also spelled loctal.

LOKTAL TUBE.

Vacuum tube having a loktal base.

LOM.

Compass locator, when installed as outer marker site or within 5.5 miles of middle marker (CAA).

LONG ARM.

Development project directed toward providing air/ground teletype communications service over very long distances.

LONG DISTANCE NAVIGATION AID.

Navigation aid usable at distances beyond the radio line of sight.

LONG RANGE.

Classification of ground radar sets by slant range. Applied to equipment with a maximum range exceeding 150 miles but less than 250 miles.

LONG RANGE DATA.

Data transmitted from a long range radar site to a direction center.

LONG RANGE RADAR.

Radar installation capable of detecting targets at ranges up to 200 or more miles, providing that a line of sight exists.

LONG SHUNT.

Connecting shunt field across both the series field and the armature instead of directly across the armature of a motor or generator.

LONG SPAN.

Span of open wire exceeding 250 feet in length.

LONG TITLE.

Descriptive title assigned to a specific document or device by the authorizing agency. It should be sufficiently descriptive to prevent the need for further dissemination of information concerning the use, content, and purpose of a publication.

LONG WAVE.

Wave lengths longer than about 1,000 meters, corresponding to frequencies from about 300 KC down to the highest audio frequencies.

LONG-PERSISTENCE SCREEN.

Fluorescent screen, used in cathode-ray tubes, which has the property of phosphorescence. When this type of screen is used, the light intensity of any particular spot dies out gradually after the ray moves to a new position.

LONG-PULL MAGNET.

Electromagnet having a conical plunger moving in a hollow core, or otherwise designed so that it can exert practically uniform pull over a considerable range of movement of its armature.

LONG-WIRE ANTENNA.

Linear antenna which, by virtue of its considerable length in comparison with the operating wave length, provides a directional pattern.

LONGITUDE.

Distance east or west of the meridian passing through Greenwich, England, measured in degrees (0° at Greenwich).

LONGITUDINAL CHROMATIC ABERRATION.

Aberration which affects the sharpness of all parts of the image because different colors come to a focus at different distances from the lens.

LONGITUDINAL CURRENT.

Current which flows in the same direction in the two wires of a parallel pair using the earth as its return path.

LONGITUDINAL WAVE.

Wave in which the direction of displacement at each point of the medium is the same as the direction of propagation.

LOOK-THROUGH.

1. When jamming, a technique whereby the jamming emission is interrupted irregularly for extremely short periods to allow monitoring of the victim signal during jamming operations.
2. When being jammed, the technique of observing or monitoring a desired signal during interruptions in the jamming signals.

LOOM.

Flexible nonmetallic tubing used to protect insulated wire.

LOOP.

1. Go and return conductors of an electric circuit; a closed circuit.
2. Commercially, the portion of a connection from central office to subscriber in a toll connection.
3. Closed path under measurement in resistance tests.
4. Type of antenna used extensively in df equipment.

LONG DISTANCE. Line from a subscriber's station directly to a long distance switchboard.

OPEN-WIRE. Branch line on a main open-wire line.

RADIO. Line from a subscriber's premise to a central office when used for program transmission or reception.

SUBSCRIBER'S. 1. Line from a subscriber to a central office.
2. Subscriber's line.

VARLEY. Arrangement of the Wheatstone bridge circuit which gives, in one measurement, the difference in resistance between the two wires of the loop. Used in testing for cable faults.

LOOP ANTENNA.

Antenna consisting of one or more complete turns of conductor, designed for directional transmission or reception.

LOOP GAIN.

Total usable power gain of a carrier terminal or two-wire repeater. The usable gain of any closed system may be less than the sum of the enclosed amplifier gains because of the tendency of the system to oscillate or sing. The maximum usable gain is determined by and may not exceed the losses in the closed path.

LOOP PULSING.

Regular, momentary interruptions of the dc path at the sending end.

LOOP TEST.

Method of testing employed to locate a fault in the insulation of a conductor when the conductor

can be arranged to form part of a closed circuit or loop.

LOOP-MILE.

Length of wire in a mile of two-wire line.

LOOPING-IN.

Method in wiring of avoiding tee joints by carrying the conductor or cable to and from the point to be supplied.

LOOSE COUPLER.

Obsolete tuning system consisting of two coils arranged so that coupling can be varied over a wide range by sliding one coil over the other.

LOOSE COUPLING.

Degree of coupling less than the critical coupling.

LOP (LINE-OF-POSITION).

Line, in air navigation along which an aircraft is known to be, and which may be utilized to establish position or fix.

LOP'S (LOCAL OPERATING PROCEDURES).

LORAC.

Navigation system which determines a position or fix by the intersection of lines of position. Each line is defined by the phase angle between a heterodyne beat-frequency of C-W signals from widely-spaced transmitters, and a reference signal of the same frequency obtained by deriving the heterodyns beat of the same two C-W signals of a fixed location and transmitting it to the receiver being located.

LORAD.

(Reference: LODAR.)

LORAN (LONG-RANGE NAVIGATION).

Hyperbolic, long range, base-referenced navigational system which operates on the principle of the time differential between two pulsed signals transmitted almost simultaneously from two ground stations. The pulse from one station, called the master station, triggers the other station, called the slave station, which transmits a similar pulse after a pretermined time delay. The receiver indicates the time differential in the arrival of the two pulses, or, in effect, the distance traveled by the two pulses. LORAN charts, or hyperbolic curves of constant time difference,

are prepared for each pair of stations. The position of the receiver will be somewhere along the curve corresponding to the measured distance in time. By providing an additional pair of stations whose curves intersect those of the first pair, a definite fix may be obtained. Accuracy is maximum when the curves intersect at the frequency range from 1,700 to 2,000 KC and uses ground waves. By applying certain correction factors, sky waves may be used to increase range. This is called SS LORAN. Because of limited overland coverage and the daytime sky-wave restrictions of the standard LORAN system, a low frequency LORAN has been developed. The principle of operation is similar but not identical to that of the standard system. One pulse modulated LF LORAN transmitter (master station) radiates pulses of approximately 300 micro-seconds duration and at a repetition rate of 50 pulses per second. Two additional transmitters (slave stations) transmit similar pulses alternately after each master station pulse at a PRF of 25 per second. These three stations are separated by distance on the order of 750 to 1,000 miles. Exact synchronism is maintained between the transmissions of master station pulses and the alternate transmissions of the two slaves. The master station propagates omnidirectionally and is received at both slave stations, at which time only one responds. This pattern repeats itself alternately at a constant rate. The LF LORAN system will provide service ranges up to 1,500 nautical miles. Charts similar to those for standard LORAN are used. A new LORAN receiver, AN/APN-70, has been developed to replace the original AN/APN-9 set. This new set provides for faster and more reliable operation, thus making it suitable for use in high speed aircraft. It covers both the standard and LF LORAN frequency bands. The AN/APN-70 is not remotely controlled and is not suitable for cockpit installation. Another recent receiver development is the miniaturized automatic LORAN, AN/APN-85. The complete system consists of two miniaturized LORAN receivers and a computer. The output is shown on left-right and distance-to-go indicators for position along

a great circle path. The receivers may also be used individually. LORAN is widely used at present by air and marine interests both military and civil. There are 59 stations in operation, world wide, with extensive coverage along the coastal areas of the U.S., in the North Atlantic, and in the Pacific. The U.S. Coast Guard is the only U.S. agency which operates LORAN equipment. The Coast Guard operates 48 of the 59 total stations. Under U.S. policy, LORAN is classed as an interim aid and will be expanded only until some ultimate aid (possibly NAVARHO) is adopted for international standardization.

LORAN STATION.

Long distance radio navigation land station transmitting synchronized pulses. Hyperbolic lines of position are determined by the measurement of the difference in the time of arrival of these pulses.

LORAN TABLES.

Tables giving terrestrial coordinates (latitude and longitude) of loran lines of position and values of the sky-wave correction.

LOSS.

1. Amount of electrical attenuation in a circuit, or the power consumed in a circuit component.
2. Energy dissipated in accomplishing useful work; usually expressed in db.

LOSSER CIRCUIT.

Resonant circuit having sufficient high-frequency resistance to prevent sustained oscillation at the resonant frequency.

LOSSES.

Combined values of power dissipated in a system without performing useful work.

LOSSLESS LINE.

Theoretically perfect line that has no loss, and hence transmits all the energy fed to it.

LOSSY ATTENUATOR.

In waveguide technique, a length of waveguide deliberately introducing a transmission loss by the use of some dissipative material.

LOSSY LINE.

1. Cable used in test measurements which has a large attenuation per unit length.

2. Transmission line which is designed to have a high degree of attenuation.

LOSSY MATERIAL.

Radar paint.

LOST.

Air defense expression used to describe a track status indicating that insufficient radar data is available to sustain continued correlation. It is also an action which may be computer generated or performed manually.

LOUD HAILER.

High power directional loudspeaker.

LOUDNESS.

Quality of a sound which determines the magnitude of the auditory sensation produced by that sound.

LOUDNESS CONTOURS.

Curves of equal loudness for sinusoidal sound waves.

LOUDNESS LEVEL.

Intensity of a 1,000 CPS tone, on the phonoscale, which is adjusted to equal, in apparent loudness, the specified sound.

LOUDSPEAKER.

Device which translates electrical impulses of audio frequencies into sound waves of corresponding frequencies. (Reference: REPRODUCER, TRANSDUCER.)

CRYSTAL. Loudspeaker in which the mechanical displacements are produced by piezoelectric action.

MOVING-COIL. Moving-conductor loudspeaker in which the moving conductor is in the form of a coil conductively connected to the source of electrical energy.

PERMANENT - MAGNET. Moving - conductor loudspeaker in which the steady field is produced by means of a permanent magnet.

PNEUMATIC. Loudspeaker in which the acoustical output results from the controlled variation of an air stream.

LOUDSPEAKER SYSTEM.

Combination of one or more loudspeakers and

all associated baffles, horns, and dividing networks arranged to work together as a coupling means between the driving electrical circuit and free air.

LOUDSPEAKER VOICE COIL.

Coil, in a loudspeaker, that moves in a magnetic field according to the audio-frequency currents passing through the coil. It is connected and imparts corresponding motion to the loudspeaker cone.

LOUVER.

Loudspeaker grill construction.

LOW ANGLE RADIATION.

Radiation at low angles above the ground plane.

LOW FREQUENCY.

1. Frequency band: 0.03 to 0.3 MC.
2. Wavelength: 1,000 to 10,000 meters.

LOW GRADE CRYPTOGRAPHIC SYSTEM.

System designed to provide temporary security.

LOW LEVEL MODULATION.

Modulation produced at a point in a system where the power level is low compared with the power level at the output of the system.

LOW LOSS.

Radio units and parts which are described as low-loss are understood to have low radio-frequency resistances and slight absorption of energy.

LOW ORDER ELECTRONIC RECONNAISSANCE.

Classified definition. (Reference: AFM 100-50.)

LOW PERFORMANCE EQUIPMENT.

Equipments having insufficiently exacting characteristics to permit their use in trunk or link circuits. Such equipment may be employed in loop circuits whenever it meets loop circuit requirements.

LOW TENSION.

Low voltage.

LOW-DEFINITION TELEVISION.

Television involving less than about 200 scanning lines in the picture.

LOW-FREQUENCY FURNACE.

Induction furnace that includes a primary winding, a core of magnetic material, and a secondary winding comprising one short-circuited turn of the material to be heated.

LOW-FREQUENCY PADDER.

In a superheterodyne receiver, a small adjustable capacitor connected in series with the oscillator tuning coil and adjusted during alignment to obtain correct calibration of the circuit at the low-frequency end of the tuning range.

LOW-PASS FILTER.

1. Filter network which passes all frequencies below a specified frequency with little or no loss but which discriminates strongly against higher frequencies.
2. Wave filter having a single transmission band extending from zero frequency up to some critical or cut-off frequency, not infinite.
3. Filter which passes all frequencies below a certain designed cut-off point and attenuates all frequencies above that point.

LOW-PASS WAVE FILTER.

Selective electronic circuit which efficiently passes waves of all frequencies from zero up to a certain frequency, called the cut-off frequency, and effectually bars waves of all higher frequencies.

LOW-QUARTZ.

Synonymous with alpha-quartz and quartz.

LOWER PITCH LIMIT.

Minimum frequency, for a sinusoidal sound wave, that will produce a pitch sensation.

LOWER SIDEBAND.

Lower of two frequencies or two groups of frequencies produced by an amplitude-modulation process. (Reference: SIDEBANDS.)

LOWEST EFFECTIVE POWER.

Minimum product of the antenna input power in kilowatts and the antenna gain required for satisfactory communication over a particular ratio route.

LOWEST USEFUL HIGH FREQUENCY.

Lowest high frequency effective at a specified time for ionospheric propagation of radio waves between two specified points.

Note. This is determined by factors such as absorption, transmitter power, antenna gain, receiver characteristics, type of service, and noise conditions.

LOX (LIQUID OXYGEN).**LPG JACKS.**

Looping jack.

LR (LONG RANGE).

Classification of ground radar sets by slant range. It is applied to equipment whose maximum range on a reflecting target of one square meter normal to the signal path exceeds 300 miles but is less than 800 miles provided that line-of-sight exists between the target and the radar.

LRD (LONG RANGE DATA).

Data transmitted from a long range radar site to a direction center.

LRR (LONG RANGE RADAR).

Radar installation capable of detecting targets at ranges up to 200 or more miles, providing line of sight exists.

LT (LIGHT).

Radiant energy evaluated according to its capacity to produce visual sensation. The term light in combination with other terms is sometimes used to denote a device used as a source of luminous energy.

LTD-STD (LIMITED STANDARD).

Classification applied to an item of supply or an item of equipment that is not as satisfactory as a standard item, but usable as a substitute for the standard item and either in actual use or available for issue to meet demand.

LTR (LETTER).**LUBBER'S LINE.**

Prominent fixed line on the compass, drift sight, or plan position indicator made parallel to the ship's keel to furnish a reference for indicating ship's heading.

LUF

LUF (LOWEST USEFUL HIGH FREQUENCY).

Lowest high frequency effective at a specified time for ionospheric propagation of radio waves between two specified points.

Note. This is determined by factors such as absorption, transmitter power, antenna gain, receiver characteristics, type of service, and noise conditions.

LUG.

Small stamped metal strip riveted or otherwise placed on a terminal to provide a convenient anchor to which wires may be soldered.

TERMINAL. Threaded lug to which a wire may be fastened.

LUMEN.

Unit of luminous flux. It is equal to the flux (illumination) on a unit surface, all points of which are at unit distance from a uniform point source of one candle.

LUMEN-HOUR.

Unit of quantity of light. It is the quantity of light delivered in one hour by a flux of one lumen.

LUMENOPHOR.

Molecule or group of molecules that, according to the Kowalski theory of luminescence, is capable of emitting light when excited by an electron collision. The reverse action occurs in an electronogen.

LUMINAIRE.

Complete lighting unit consisting of a light source together with globe, reflector, refractor, housing, socket, and other parts integral with the housing.

LUMINANCE.

1. Luminous flux emitted, reflected, or transmitted per unit solid angle per unit projected area of the source. Usual units are the lumen per steradian per square meter, the candle per square foot; the lambert, the mililambert, and foot-lambert.

2. In color television, it is standardized brightness.

LUMINANCE CHANNEL.

In color television system, any path which is intended to carry the luminance signal. The luminance channel may also carry other signals, for example, the carrier color signal, which may or may not be used.

LUMINANCE SIGNAL.

In television, a signal wave which is intended to have exclusive control of luminance picture.

LUMINESCENCE.

1. Emission of radiation, especially visible light, by a substance as a result of the absorption of energy from some other emission, either radiant or corpuscular. Giving off of light at a temperature below that of incandescence.

2. In general, an emission of light by a substance from other causes than high temperature. The radiating of cold light as seen from fireflies or luminous paint.

LUMINESCENT.

Type of material which will give off light without heat when energized by an external source such as a stream of electrons or radiant energy.

LUMINOSITY CURVE.

Distribution curve showing luminous flux per element of wave length as a function of wave length.

LUMINOUS.

Emitting light.

LUMINOUS EFFICIENCY.

Ratio of the luminous flux (light capable of producing visual sensation) to the radiant flux (available radiant energy). Usually expressed in lumens per watt of radiant flux. Not to be confused with efficiency of a practical source of light, since the latter rating is based on power supplied to the source instead of on total radiant energy coming from the source.

LUMINOUS FLUX.

1. Time rate of flow of light. When radiant flux is evaluated with respect to its capacity to evoke the brightness attribute of visual sensation, it is called luminous flux, and this capacity is expressed in lumens.

2. Rate of emission of visible radiation, especially as judged by its visual effect. The quantity of light emitted from a light source.

LUMINOUS INTENSITY.

Strength of the illumination at a surface.

LUMINOUS SENSITIVITY OF PHOTOTUBE.

Quotient of the anode current by the incident luminous flux.

LUMPED.

1. Combined as a single value equivalent to a number of separated or distributed values.
2. Effectively concentrated at a single point.

LUMPED CONSTANT.

Single constant that is electrically equivalent to the total of that type of distributed constant existing in a coil or circuit.

LUNAR GRAVITY.

Attraction of particles and masses toward the gravitational center of the moon.

LUNAR PROBE.

Unmanned guided missile sent into space with the required velocity and heading to circumnavigate or land on the moon.

LUX.

Practical unit of illumination in the metric system, equivalent to the metercandle. It is the illumination on a surface one square meter in area

on which there is a uniformly distributed flux of one lumen, or the illumination produced at surface, all points of which are at a distance of one meter from a uniform point source of one candle.

LUXEMBURG EFFECT.

Nonlinear effect in the ionosphere as a result of which the modulation on a strong carrier wave is transferred to another carrier passing through the same region.

LUXMETER.

Type of illumination photometer employing a variable aperture and the contrast principle.

LVOR (LOW POWER VOR).

Refers to a low-powered (50-watt) VHF omnirange complex with standby and monitoring equipment. LVOR is intended primarily for installation in enroute areas to supplement the navigational aid service provided by the VOR system. Thus it serves as a gap filler in the VOR system.

LWS.

Mobile light weight radar early warning apparatus used in air reporting.

LZ (LANDING ZONE).

Zone designated for the landing of aircraft in an airborne assault.

M

M (MACH).

Speed of a moving body as measured against the speed of sound. Example: Mach 0.5, a speed equal to one-half the speed of sound.

M (METER).

1. Term used to designate any type of measuring device including all types of electrical measuring instruments.
2. Unit of length in the metric system of measurement. One meter is equal to 39.37 inches, 3.281 feet, or 1.094 yards in English units of length.

M-INDICATOR.

Modification of type A scan in which the horizontal time base is slightly displaced in a vertical direction by insertion of a step which serves as an adjustable range marker. A ranging circuit is used for controlling the position of the step along the trace, and range is indicated on counters when the step and an echo are brought into coincidence.

M-SERIES.

Series of frequencies in the X-ray spectrum of an element believed to arise from the transition of electrons from various higher quantum states to the state whose principal quantum number is 3.

M&R (MAINTENANCE AND REPAIR).**M&S (MAINTENANCE SUPPLY.)****MA.**

ITU designation for aircraft station.

MA (MILITARY ATTACHE MILLIAMPERE).**MAAC (MILITARY ASSISTANCE ADVISORY COMMITTEE).****MAAG (MILITARY ASSISTANCE ADVISORY GROUP).****MAAMA (MIDDLETOWN AIR MATERIAL AREA).**

Air material area with headquarters at Middletown, Pennsylvania.

MACC (MARINE AIR CONTROL GROUP).**MACH (MACHINE).**

(Reference: MACHINE.)

MACH.

Speed of a moving body as measured against the speed of sound. Example: Mach 0.5, a speed equal to one-half the speed of sound.

MACH NUMBER.

Ratio of the velocity of a body to that of sound in the medium being considered.

MACHINE.

Apparatus with moving parts.

MACHINE CHECK.

(Reference: AUTOMATIC CHECK.)

MACHINE LANGUAGE.

1. Language, occurring within a machine (Electronic Computer) ordinarily not perceptible or intelligible to persons without special equipment or training.
2. Translation or transliteration of 1. above into more conventional characters, but frequency still not intelligible to persons without special training.

MACHINE RINGING.

Ringling which is started either mechanically or by an operator, after which it continues automatically until the call is answered or abandoned.

MACHINE, LASHING.

Device for fastening a cable and strand together with a spiral wire wrapping to support the cable.

MACHINE-GUN MIKE.

Line microphone.

MAD. (MAGNETIC AIRBORNE DETECTION) EQUIPMENT.

Localization device capable of detecting the magnetic field of a submarine at distances of approximately 400 feet from the detector head. The receiver system mounted in the aircraft includes an Easterline-Angus trace recorder which registers the small distortions produced in the earth's magnetic field caused by the presence of a ferrous body (the submarine) and informs the

pilot of a contact. This is a passive nondirectional measurement and range or detection is independent of presence or absence of salt water. MAD. equipment is generally used in connection with Sonobuoys. A unique advantage of MAD. is that it is a passive detection device and does not emit electromagnetic or mechanical energy as does radar or sonar equipment: Military Assistance Division, Hq., USAF.

MAG (MAGNETO; MAGAZINE MAGNETRON).**MAG-SLIP.**

British trade name for a synchronous device such as the Selsyn, Autosyn, Motortorque Generator, and Siemens; all of which are equal to the universal term synchro.

MAGIC EYE.

Type of cathode ray tuning indicator producing an image somewhat resembling in appearance a human eye. (Reference: CATHODE-RAY TUNING INDICATOR.)

MAGNESIUM.

Alkaline metal whose compounds are sometimes used for cathodes.

MAGNESIUM ANODE.

Bar of magnesium, buried in the earth, connected to an underground cable to prevent cable corrosion due to electrolysis. Forms a battery and keeps the sheath potential positive. Used in areas where electrolytic action deteriorates the cable sheaths.

MAGNESIUM-COPPER SULPHIDE RECTIFIER.

Dry-disk rectifier consisting of magnesium in contact with copper sulphide.

MAGNESYN.

Portion of a repeater unit; a two-pole permanent-magnet rotor within a three-phase two-pole delta-connected stator. The rotor carries the indicating pointer and is free to rotate in any direction.

MAGNET.

Metal which has the property of attracting or repelling other pieces of magnetic metal. Exists in two forms permanent, and as an electromagnet.

MAGNET BRAKE.

Friction brake controlled by electromagnetic means.

MAGNET KEEPER

Bar of iron or steel placed across the poles of a horseshoe magnet to complete the magnetic circuit when the magnet is not in use, to avoid the self-demagnetizing effect of leakage flux.

MAGNET STEEL.

Special steel having high retentivity and usually containing some combination of tungsten, cobalt, chromium and manganese with steel. Used in permanent magnets.

MAGNET WIRE.

Insulated copper wire in any of the sizes commonly used for winding the coils of electromagnets and electromagnetic devices, used chiefly in radio equipment. It is single copper wire insulated with cotton, silk, or enamel.

MAGNETIC AMPLIFIER.

Device using one or more saturable reactors, either alone or in combination with other circuit elements, to secure power gain.

MAGNETIC ANALYSIS.

Separation of a stream of electrified particles by a magnetic field in accordance with their mass, charge, or speed. This is the principle of the mass spectrograph.

MAGNETIC AZIMUTH.

Azimuth measured from magnetic north.

MAGNETIC BEARING.

Angular line of position of an object in respect to the earth's magnetic north pole, expressed in degrees clockwise from that pole.

MAGNETIC BRAKING.

Electric braking in which brakes are applied by magnetic force, the current for exciting the electromagnets being derived either from the traction motors, acting as generators, or from an independent source.

MAGNETIC CIRCUIT.

Complete path of magnetic lines of force.

MAGNETIC CONTACTOR.

Contactors actuated by electromagnetic means.

MAGNETIC COURSE.

Course in which the direction of the reference line is magnetic north.

MAGNETIC DAMPING.

Retarding mechanical motion by the reaction between two or more magnetic fields.

MAGNETIC DECLINATION.

Angle between the true (geographical) north and magnetic north (direction of the compass needle). The magnetic declination is different for different places and changes continuously with respect to time.

MAGNETIC DEFLECTION.

System using electromagnetic fields for the deflection of electron beams, as in cathode-ray tubes.

MAGNETIC DIPOLE OR DOUBLET.

Simple loop antenna which is capable of radiating an electromagnetic wave in response to a circulation of electric current in the loop. For theoretical purposes, the elementary dipole is so small that its directive properties are independent of its size and shape. It is the magnetic analog of the electric dipole.

MAGNETIC DIRECTION INDICATOR.

Instrument providing compass indication obtained electrically from a remote gyro-stabilized magnetic compass or equivalent.

MAGNETIC DISPLACEMENT.

Magnetic flux density or magnetic induction.

MAGNETIC FIELD.

1. Region in which the magnetic forces created by a permanent magnet or by a current-carrying conductor or coil can be detected.
2. State of the medium in which moving electrified bodies are subject to forces by virtue of both their electrifications and motion.

MAGNETIC FIGURES.

Pattern showing the distribution of magnetic field, made by sprinkling iron filings on a non-magnetic surface in the field.

MAGNETIC FLUX.

Lines of force generated by a magnet.

MAGNETIC FLUX DENSITY.

Magnetic quantity (number of magnetic lines of force) that determines how much voltage will be induced in a conductor moving through a particular point in magnetic lines of force per unit area at right angles to the lines. (Reference: MAGNETIC INDUCTION.)

MAGNETIC FOCUS.

Method of focusing an electron stream in which focus is produced through the action of a magnetic field.

MAGNETIC FORCE.

(Reference: MAGNETIZING FORCE.)

MAGNETIC HYSTERESIS LOSS.

In a material for a specified cycle of magnetizing force, the energy converted into heat as a result of magnetic hysteresis when the magnetic induction is also cyclic.

MAGNETIC INDUCTION.

Action of producing magnetism in iron or steel by the action of lines of force or a magnetic field.

MAGNETIC INTENSITY.

(Reference: MAGNETIZING FORCE.)

MAGNETIC INTENSITY PRODUCED BY ELECTRIC CURRENT.

Magnetic intensity at any point in the neighborhood of a circuit in which an electric current, i , is flowing can be computed on the assumption that every infinitesimal length of circuit produces at the point an infinitesimal magnetic intensity and the resulting magnetic intensity at the point is the vector sum of the contributions of all the elements of the circuit. Known as Biot-Savart's Law and as Ampere's Law.

MAGNETIC LEAKAGE.

Passage of magnetic flux outside of the path along which it can do useful work.

MAGNETIC LENS.

Apparatus that focuses beams of rapidly moving electrons or ions in a cathode-ray tube or other device by means of a nonuniform magnetic field.

MAGNETIC LINES OF FORCE.

Imaginary line used for convenience to designate the direction in which magnetic forces are acting as a result of a magnetomotive force.

MAGNETIC LOUD SPEAKER.

Loudspeaker which operates by a magnetic reaction between a moving iron armature and a permanent magnet.

MAGNETIC MATERIALS.

Materials that show magnetic properties. Ferromagnetic materials are strongly magnetic, while paramagnetic materials are feebly magnetic.

MAGNETIC MERCURY SWITCH.

Mercury switch actuated by movement of an external electromagnetic or permanent magnetic instead of by tilting. The magnet moves a soft iron armature inside the tube, causing the attached contact element to move into or out of a mercury pool forming the other contact.

MAGNETIC MICROPHONE.

Microphone which depends for its operation on variations in the reluctance of a magnetic circuit.

MAGNETIC MINE.

Underwater mine provided with an arrangement of relays that causes it to detonate when the proximity of the steel hull of a ship causes a redistribution of the magnetic field at the mine.

MAGNETIC MODULATOR.

Modulator employing a magnetic circuit as the modulating element.

MAGNETIC MOMENT.

Ratio of the maximum torque exerted on a magnet to the magnetizing force of the field in which it is situated.

MAGNETIC NEEDLE.

Magnetized needle used in a compass. When freely suspended, it will assume a position parallel to the earth's magnetic lines of force which connect the magnetic poles.

MAGNETIC NORTH.

Direction indicated by the north-seeking end of the needle of a magnetic compass.

MAGNETIC PICK-UP.

Phonograph pick-up, the electric output which is generated by the relative motion of a magnetic field and a coil or conductor located within the magnetic field.

MAGNETIC POLE.

Poles of a magnet are those portions of the magnet toward which the external magnetizing force tends to converge or diverge.

MAGNETIC POTENTIAL DIFFERENCE.

Line integral of magnetizing force between two points in a magnetic field.

MAGNETIC RECORDER.

Device for recording sound on tape or wire by magnetic means.

MAGNETIC RECORDING.

Method of recording signals, usually audio frequencies, by magnetizing areas of a tape or wire. When the energized tape or wire is passed through a reproducing head, the magnetized areas generate voltages in the pickup coil proportional to the original signal.

MAGNETIC RECORDING.

Type of recording in which the marking on the record sheet is produced principally by magnetizing the sheet. Magnetic powder is then dusted on and transferred.

MAGNETIC SATURATION.

Condition in an iron core in which further increases in magnetizing force produce little or no increase in magnetic lines of force the given object can carry.

MAGNETIC SEPARATOR.

Apparatus for separating powdered magnetic ores from nonmagnetic ores or for separating iron filings and other small iron objects from similar nonmagnetic materials. It employs an electromagnet to deflect magnetic materials from the path taken by the nonmagnetic materials.

MAGNETIC SHIELD.

Sheet or core of iron, enclosing instruments or radio parts to protect them from stray magnetic fields by providing a convenient path for the magnetic lines of force.

MAGNETIC SHUNT.

Piece of iron, usually adjustable as to position, used to divert a portion of the magnetic lines of force passing through an air gap in an instrument or other device. Usually used for calibration purposes.

MAGNETIC SPEAKER.

Magnetic-armature loudspeaker.

MAGNETIC STORM.

Disturbance in the earth's magnetic field occurring concurrently with ionospheric storms. These probably are due to intense particle radiation from the sun.

MAGNETIC STRAIN GAGE.

Instrument that depends on the change in the reluctance of a magnetic circuit having a movable armature to measure strains in rails or other structural members that undergo very small deflection under load.

MAGNETIC SUSCEPTIBILITY.

Ratio of the magnetic intensity in a substance to the applied magnetizing force. It is the reciprocal of permeability.

MAGNETIC TESTER.

Instrument for measuring the permeability or hysteresis of samples of iron or steel.

MAGNETIC TRACK.

Angle measured clockwise from magnetic north to the path followed by an aircraft over the earth.

**MAGNETIC TRANSITION TEMPERATURE
(CURIE POINT).**

In a ferromagnetic material, the temperature at which, with increasing temperature, the transition from ferromagnetic to paramagnetic properties appears to be complete.

MAGNETIC UNITS.

Used to measure magnetic quantities, such as the ampere-turn, gauss, gilbert, line of force, maxwell, oersted, and unit magnetic pole.

MAGNETIC-ARMATURE LOUDSPEAKER.

Loudspeaker whose operation involves vibration of a ferromagnetic armature.

MAGNETIC-VANE METER.

Alternating-current meter containing a metal vane pivoted inside a coil in such a way that rotation of the vane and attached pointer due to magnetic forces is proportional to the value of the alternating current passing through the meter.

MAGNETICS.

Branch of science which deals with the laws of magnetic phenomena.

MAGNETISM.

Property possessed by certain materials by which these materials can exert mechanical force on neighboring masses of magnetic materials and can cause voltages to be induced in conducting bodies moving relative to the magnetized bodies.

MAGNETITE.

Mineral consisting chiefly of a magnetic oxide of iron that is found in its natural state in a magnetized condition.

MAGNETIZATION.

1. Degree to which a particular object is magnetized.
2. Process of magnetizing a susceptible material.

MAGNETIZATION CURVE.

Curve plotted on a graph to show successive states during magnetization of a ferromagnetic material. A normal magnetization curve is a portion of a symmetrical hysteresis loop, while a virgin magnetization curve shows what happens the first time the material is magnetized.

MAGNETIZING FORCE.

Force that produces magnetization of a substance. It is designated by the symbol "H" and is expressed in oersteds.

MAGNETO.

Hand-driven, two-pole generator used for generating ringing signals.

MAGNETO CENTRAL OFFICE.

Telephone central office for serving magneto telephone sets.

MAGNETO SWITCHBOARD.

Manual exchange at which the subscribers and operators call and clear by means of magneto generators.

MAGNETO SWITCHBOARD.

Telephone switchboard for serving magneto telephone sets. (Reference: SWITCHBOARD, MAGNETO.)

MAGNETO TELEPHONE.

Telephone equipped with a magneto (hand-driven, two-pole, ringing-signal generator).

MAGNETO TELEPHONE SET.

Local battery telephone set in which current for signaling by the telephone station is supplied from a local hand generator. (Reference: MAGNETO.)

MAGNETOELECTRIC GENERATOR.

Electric generator, the field poles of which are permanent magnets.

MAGNETOGRAPH.

Magnetometer equipped to provide a continuous record of changes occurring in the magnetic field of the earth.

MAGNETOMETER.

Instrument for measuring the magnitude and sometimes the direction of a magnetic force.

MAGNETOMETER METHOD.

Use of a magnetometer to test magnetic characteristics of an object by noting the deflection when a long bar of the substance to be tested is magnetized by a known current in a long solenoid.

MAGNETOMOTIVE FORCE.

Force that is the cause of magnetic induction. It is the total magnetizing force acting around a closed magnetic circuit. If it results from the flow of current in a coil, it is proportional to ampere-turns. The CGS unit of magnetomotive force is the gilbert (equal to about 0.8 ampere-turn).

MAGNETOSTRICTION.

Expansion and contraction of a magnetic material under the influence of a varying magnetic field. Certain metals, notably nickel and some of

its alloys, undergo dimensional changes when subjected to the influence of a magnetic field. Since these changes are minute—in the order of 1 part per million—the phenomenon is usually observed or employed by placing a narrow rod or tube in a solenoid carrying either alternating or direct current. (Reference: JOULE EFFECT.)

MAGNETOSTRICTIVE.

Changing in dimensions when placed in a magnetic field.

MAGNETOSTRICTIVE LOUDSPEAKER.

Loudspeaker in which the mechanical forces result from the deformation of a material having magnetostrictive properties.

MAGNETOSTRICTIVE MICROPHONE.

Microphone which depends for its operation on the generation of an electromotive force by the deformation of a material having magnetostrictive properties.

MAGNETOSTRICTIVE OSCILLATOR.

Oscillator, the frequency of which is controlled by a magnetostrictive element.

MAGNETOSTRICTIVE RESONATOR.

Ferromagnetic rod so designed and arranged that it can be excited magnetically into resonant vibration at one or more definite and known frequencies.

MAGNETRON.

Tube or oscillator, capable of generating microwave energy of high peak power, even in excess of several hundred kilowatts, thereby delivering powerful pulses of radio-frequency energy.

MAGNETRON EFFECT.

Reduction in the electron emission in a thermionic vacuum tube due to the magnetic field of the filament current. This imposes a limit on the output of large vacuum tubes.

MAGNETRON OSCILLATOR.

Oscillator circuit employing a magnetron tube.

MAGNETRON PULLING.

Frequency shift of a magnetron caused by factors which vary the standing-wave ratio or the disposition of standing waves on the RF lines.

MAGNETRON PUSHING.

Frequency shift of a magnetron caused by faulty operation of the modulator.

MAGNETRON RECTIFIER.

Gaseous vacuum tube rectifier in which no electrodes are heated and the electron stream is controlled by an external magnetic field.

MAGNIFICATION.

Increase in the apparent size of an object produced by an optical element or instrument.

MAGNIFYING POWER.

Ability of a lens, mirror, or optical system to make an object appear larger.

MAGNITUDE.

In astronautics, brightness of a star.

MAIN BANG.

Transmitted pulse of a radar set.

MAIN CONTROL UNIT.

Unit associated with transmitter-receiver unit containing controls not necessary to operator but essential for energizing, adjustment, etc.

MAIN DISTRIBUTING FRAME.

Distributing frame, on one part of which terminate the permanent outside lines entering the central office building and on another part of which terminate the subscriber line multiple cabling, trunk multiple cabling, etc., used for associating an outside line with any desired terminal in such a multiple or with any other outside line. It usually carries the central office protective devices and functions as a test point between line and office. In private exchange the main distributing frame is for similar purposes.

MAIN EXCITER.

Exciter which supplies energy for the field excitation of another exciter.

MAIN FRAME, TYPE B.

Distributing frame carrying on one side (vertical) all outside lines and protective devices for those lines and on the other (horizontal) all connections of the outside lines toward the central equipment.

MAIN POWER.

Line power supplied to complete system.

MAIN PULSE.

(Reference: MAIN BANG.)

MAIN RECEIVER

Receiver regularly available in a ship station for routine communication, and ordinarily energized by a source of power other than the emergency power supply.

MAIN STATION.

Telephone station with a distinct call number designation, directly connected to a central office.

MAIN SWEEP.

On some fire control radars, the longest range scale available.

MAIN TRANSFORMER.

Main transformer, as applied to two single-phase, T-connected units for three-phase to two-phase or two-phase to three-phase operation, is the transformer which is connected directly across one phase of the three-phase lines. A tap is provided at the mid-point for connection to the teaser transformer.

MAIN TRANSMITTER.

Radio transmitter regularly available in a ship station for routine communication, and ordinarily energized by a source of power other than the emergency power supply.

MAINS.

Conductors extending from the service switch, generator bus, or converter bus to the main distribution center in interior wiring.

MAINT (MAINTENANCE).

(Reference: MAINTENANCE).

MAINTENANCE.

1. Action taken to retain materiel in a serviceable condition or to restore it to serviceability. It includes inspection, testing, servicing, classification as to serviceability, repair, rebuilding and reclamation.
2. Supply and repair action taken to keep a force in condition to carry out its mission.

3. Routine recurring work required to keep a facility (plant, building, structure, ground facility, utility system, or other real property) in such a condition that it may be continuously utilized, at its original or designed capacity and efficiency, for its intended purpose.

DEPOT. In Army and Air Force usage, that maintenance of materiel which involves a major overhaul or complete rebuilding of parts, subassemblies, and/or the end item as required. Such maintenance is intended to augment stocks of serviceable equipment or to support lower levels of maintenance by the use of more extensive shop equipment and personnel of higher technical skill than are available in organizational or field maintenance activities.

FIELD. In Army and Air Force usage, that maintenance authorized and performed by designated maintenance activities in direct support of using organizations. It is normally limited to replacement of unserviceable parts, subassemblies, or assemblies.

ORGANIZATIONAL. In Army and Air Force usage, that maintenance authorized for, performed by, and the responsibility of, a using organization on its own equipment. This maintenance consists normally of inspection, cleaning, servicing, preserving, lubrication, and adjustment as required, and may also include minor parts replacement not requiring highly technical skills.

PREVENTIVE. Care and servicing by personnel for the purpose of maintaining equipment and facilities in satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects.

MAINTENANCE AREA.

Territory set up for repair and replacement work.

MAINTENANCE CONTROLS.

Those necessary for correct setup of equipment that are not available to the operator.

MAINTENANCE STATUS.

1. Nonoperating condition, deliberately imposed, with adequate personnel to maintain and preserve installations, materiel, and facilities in such a condition that they may be readily restored to operable condition in a minimum time by the assignment of additional personnel and without extensive repair or overhaul.

2. Condition of materiel which is in fact, or is administratively classified as, unserviceable pending completion of required servicing or repairs.

MAJOR APEX FACE.

One of the three large sloping faces extending to the apex or pointed end of a natural quartz crystal. The other three smaller sloping faces are the minor apex faces.

MAJOR CYCLE.

In a storage device which provides serial access to storage positions, the time interval between successive appearances of a given storage position.

MAJOR FACE.

One of the three larger sides of a natural hexagonal quartz crystal.

MAJOR ITEMS.

Operational units of communications-electronics equipment which are designed to perform a specific communications or electronics function. Major items will be designated in SFEL's for the guidance of engineering agencies. Examples of major items are transmitters, receivers, radar sets and cable (by the reel).

MAJOR LOBE.

Lobe containing the direction of maximum radiation or reception.

MAJOR PLANE SURFACE.

Crystal used in reference to the broad surface (plane of flattening) of a blank, wafer, section or oscillator-plate.

MAJOR RELAY STATION.

Tape relay station is designated as a major tape relay station; when two or more trunk circuits connected thereto provide an alternate route; or to meet command requirements.

MAKE.

Closing of relay, key, or other contacts.

MAKE CONTACT.

Contact of a device which closes a circuit upon the operation of the device (normally open).

MAKE, PERCENT.

In pulse testing, the length of time a circuit stands closed compared to the length of the test signal.

MALFUNCTION.

(Reference: ERROR.)

MAN-MADE STATIC.

High-frequency noise signals, created by sparking in an electric circuit. When picked up by radio receivers it causes buzzing and crashing sounds.

MANAH (MANUAL AMENDMENT WEATHER TRANSMISSION HANDBOOK).

MANGANIN.

Alloy used in making precision wire-wound resistor because of its low temperature coefficient of resistance.

MANHOLE.

Subsurface chamber, large enough for a man to enter, in the route of one or more conduit runs, and affording facilities for placing and maintaining conductors, cables, and any associated apparatus in the runs.

MANHOLE CHIMNEY.

Vertical passageway for workmen and equipment between the roof of the manhole and the street level.

MANIPULATE COMMUNICATIONS DECEPTION.

Classified definition. (Reference: AFM 100-50.)

MANIPULATIVE DECEPTION.

Manipulation of traffic in friendly communication channels with the intention of deceiving the enemy.

MANIPULATIVE RADIO COMMUNICATION DECEPTION.

Classified definition. (Reference: AFM 100-50.)

MANOMETER.

Instrument used to make accurate readings of gas pressure.

MANOP (MANUAL OF OPERATIONS).

Manual of operations of a weather transmission handbook.

MANUAL.

Hand operated as opposed to machine operated.

MANUAL CENTRAL OFFICE.

Central office of a manual telephone system.

MANUAL CONTROL.

Arrangement involving opening or closing of switching devices by hand.

MANUAL CONTROLLER.

Electric controller having all of its basic functions performed by hand.

MANUAL DATA.

Data transmitted from air-defense activities other than SAGE long-range or gap-filler radars for use in a computer.

MANUAL DATA SUPERVISOR.

Noncommissioned officer responsible to the air surveillance officer for supervising the insertion of manual data into a computer.

MANUAL DATA TECHNICIAN.

Airman responsible to the air surveillance officer for inserting manual data into the computer.

MANUAL EXCHANGE.

Exchange in which the lines are connected to a switchboard and controlled by an operator.

MANUAL FIRE ALARM SYSTEM.

System in which the signal transmission is initiated by manipulation of a device provided for the purpose.

MANUAL HOLDUP ALARM SYSTEM.

Signal transmission is initiated by the direct action of the person attacked or of an observer of the attack.

MANUAL INPUT.

Track status associated with surveillance information which is reported from a manual source and inserted into a computer.

MANUAL RINGING.

Ringling which is started by the manual operation of a key and continues only while the key is held operated.

MANUAL SWITCHBOARD.

Telephone switchboard in which the connections are made manually, by plugs and jacks or by keys.

MANUAL SWITCHING.

Method by which manual connection is made between two or more teletypewriter circuits.

MANUAL TELEGRAPHY.

Telegraph operation in which the signal elements are formed individually by an operator from his knowledge of the code and simultaneously transmitted.

MANUAL TELEPHONE SET.

Set not equipped with a dial.

MANUAL TELEPHONE SYSTEM.

System in which telephone connections between customers are ordinarily established manually by telephone operators in accordance with orders given verbally by the calling parties.

MANUAL TUNING.

Rotation of the tuning-control knob of a radio receiver by hand to tune in a desired station.

MAP. (MILITARY ASSISTANCE PROGRAM).**MAP.**

Representation, usually on paper, of the earth's surface, or of a part of it; also, representation of the celestial sphere, or of a part thereof.

INTERMEDIATE SCALE. Map, normally of a scale from 1:200,000 to 1:500,000, intended for planning strategic operations, including the movement, concentration, and supply of troops.

LINE ROUTE. Map or overlay for signal communication operations that shows the actual routes and type of construction of wire circuits in the field. (Reference: ROUTE DIAGRAM.)

MEDIUM SCALE. Map having a scale from 1:100,000 exclusive to 1:1,000,000 inclusive.

OPERATION. Map showing the location and strength of friendly forces involved in an operation. It may indicate predicted movements and location of enemy forces.

PLANIMETRIC. Map representing only the horizontal position of features.

SITUATION. Map showing the tactical or the administrative situation at a particular time, used for staff study or as an addition to staff reports.

SMALL SCALE. Map having a scale smaller than than 1:1,000,000.

STRATEGIC. Map of medium scale, or smaller, used for planning of operations including the movement, concentration, and supply of troops.

TACTICAL. Large scale map used for tactical and administrative purposes.

TOPOGRAPHIC. Map which presents the vertical position of features in measurable form as well as their horizontal positions.

MAP-CHART.

Representation of a land-sea area, using the characteristics of a map to represent the land area and the characteristics of a chart to represent the sea area, with such special characteristics as to make the map-chart most useful in military operations, particularly amphibious operations.

MAPAG (MILITARY ASSISTANCE PROGRAM ADVISORY GROUP).**MAPPING.**

Air defense term used to describe a manual process wherein a semi-opaque paint is used on the face of a mapping console to provide filtered radar data to the computer.

MAPPING CONSOLE.

Console containing a plan-position indicator augmented by a photoelectric cell.

MAPPING SUPERVISOR GAP FILLER.

Noncommissioned officer responsible to the air surveillance officer for gap-filler mapping.

MAPPING SUPERVISOR LONG RANGE.

Noncommissioned officer responsible to the air surveillance officer for long-range mapping.

MAR. (MARINE).

MARCONI ANTENNA.

Antenna system of which the ground is an essential part, as distinguished from a Hertz antenna.

MARGIN.

General definition is the distance between limits on a scale, usually arbitrary, in which printing telegraphy is error-free. The specific definition is that fraction of a perfect signal element through which the time of selection may be varied in one direction from the normal time of selection without causing errors while signals are being received. There are two distinct margins, determined by varying the time of selection in either direction from normal.

MARGINAL CHECKING.

Preventive maintenance procedure in which certain operating conditions are varied about their normal values in order to detect and locate incipient defective units.

MARGINAL TESTING.

(Reference: MARGINAL CHECKING.)

MARINE BROADCAST STATION.

Coast station which makes scheduled broadcasts of time, meteorological and hydrographic information.

MARINE FIRE STATION.

Station used for intercommunication by radio between municipal fire departments and fireboats.

MARINE RADIO BEACON STATION.

Radionavigation land station, the emissions of which are intended to enable a ship's station to determine its bearing or direction in relation to the marine radio beacon station.

MARITIME MOBILE SERVICE.

1. Radio service carried on between maritime mobile stations and land stations and by maritime mobile stations communicating among themselves.

2. Mobile service between ship stations and coast stations, or between ship stations.

MARITIME RADIONAVIGATION SERVICE.

Radionavigation service intended for the benefit of ships.

MARK.

In telegraphic communications, refers to the closed circuit condition or the signal causing the closed or printing conditions.

MARK AND SPACE IMPULSES.

In neutral operation the term mark impulse refers to the closed circuit signal and the term space impulse refers to the open circuit signal. In other than neutral operation, the term mark impulse is applied to the circuit condition which produces the same result in the terminal equipment that a mark impulse produces in neutral operation. Similarly, the term space impulse is applied to the circuit condition which produces the same result in the terminal equipment that a space impulse produces in neutral operation.

MARK X.

Radar system incorporating ground interrogators and airborne transponders which may be used to distinguish friend from foe.

MARK X DATA.

Information modified into a form which a computer can use. Correlated: Associated with a track. Uncorrelated: Not associated with a track.

MARKER.

1. Electronic range or bearing indication on a radar indicator.
2. Marker beacon.

MARKER ANTENNA.

Transmitting antenna used with a marker beacon.

MARKER BEACON.

Radio station located at a point intermediate between radio-range stations of an airway to give positional information to pilots. It is also used with instrument landing approach systems to designate the relative distances from the approach end of the runway.

MARKER OSCILLATOR.

Source of range markers.

MARKERS, FLOOR.

Metal disc placed in a floor from which the reference lines are located.

MARKING AND SPACING INTERVALS.

In telegraph communication, the intervals which correspond, according to convention, to one condition or position of the originating transmitting contacts, usually a closed condition; spacing intervals are the intervals which correspond to another condition of the originating transmitting contacts, usually an open condition.

MARKING BIAS.

Bias which affects the results in the same direction as marking current.

MARKING CONTACT.

Contact of a telegraph relay which is closed when marking current is controlling the relay operation.

MARKING CURRENT.

Magnitude and polarity of current in the line when the receiving mechanism is in the operated position.

MARKING PANEL.

Sheet of material displayed by ground troops for visual signaling to friendly aircraft.

MARKING PULSE.

In a teletypewriter, the signal interval during which time the teletypewriter selector unit is operated.

MARKING WAVE.

In telegraphic communication, the emission which takes place while the active portions of the code characters are being transmitted.

MARS. (MILITARY AFFILIATED RADIO SYSTEM).

World-wide network of radio stations operated by amateurs both on and off military installations, but sponsored jointly by the Air Force and Army to provide an alternate communication system in case of emergency need. Formerly known as Military Amateur Radio System.

MARSHALLING AREA.

General area in which marshalling camps and departure airfields are located and from which an air movement is initiated.

MARTYN'S THEOREM.

Relationship between the equivalent path of a radio wave at oblique incidence to that of an equivalent path at vertical incidence.

MAS (MILITARY AGENCY FOR STANDARDIZATION).**MASERS.**

Electronic detector, could be crystal cooled type in form of a transistor, vacuum tube, or of other mineral, chemical, or ceramic development, which is used to reduce receiver noise problems.

MASKING.

1. Programed process to eliminate radar coverage beyond boundaries, or to eliminate areas where there is an excess of overlap coverage by radar stations. (Reference: AFM 100-50.)

2. Term used in acoustics to denote the shift of the audibility threshold of one sound, due to the presence of another. It may be expressed quantitatively in decibels.

3. Process whereby the navigational value of a transmitter is nullified or minimized in selected areas by the operation of additional suitably sited transmitters on the same frequency. (Reference: CLUTTER.)

MASKING OF SOUND.

Shift of the threshold of audibility of the masked sound due to the presence of the masking sound. The unit is the decibel.

MASONITE.

Fiberboard made from steam-exploded wood fiber. Its highly compressed forms are sometimes used for panels in electrical equipment.

MASS.

1. Property which determines the acceleration a body will have when acted upon by a given force.

2. Weight of a body divided by its acceleration due to gravity.

MASS ABSORPTION COEFFICIENT.

Coefficient of a substance is the ratio of its absorption coefficient to its density.

MASS SPECTROMETER.

Instrument consisting essentially of a vacuum tube in which is admitted a small amount of a gas to be studied. The molecules of the gas are ionized by electrons emitted from a thermionic cathode and speeded up by an accelerating grid. The various types of ions so formed are drawn out of the ionizing chamber by an applied electric field, then sent through a combination of electric and magnetic fields that sorts the ions according to their ratios of mass to charge. Used for rapid analysis of chemical compounds.

MASS SPECTRUM.

Spectrum obtained by using an electric or magnetic field to deflect a beam of positive rays emerging from a tube containing a small quantity of the gas that is to be investigated. The amount of deflection will depend on the ratio of the mass of a particle to its atomic charge. Every element has characteristic mass spectrum lines.

MAST.

Vertical or nearly vertical metal pole serving as an antenna, or a pole serving as an antenna support.

MASTER.

Negative produced from the original recording.

MASTER CONTROL BOARD.

Control board at which all the main operating controls of a broadcast studio or transmitter are located.

MASTER EQUIPMENT AUTHORIZATION LIST.

Air Force publication that prescribes unit mission equipment authorized to T/O units.

MASTER FIRE-ALARM BOX.

Box included in the circuit of municipal street fire-alarm boxes, which can be tripped from a remote point by manual or automatic means.

MASTER FOX.

Master Test Transmitter Distributor (Tee Dee) output. Jack terminations are located on each bay of the dc path panel.

MASTER GAIN.

Control of overall gain to all associated indicators.

MASTER MULTIVIBRATOR.

Master oscillator using a multivibrator unit.

MASTER OFFICE.

Central office which serves as suboffice or a satellite office.

MASTER OSCILLATOR.

1. Oscillator which provides or controls modulator drive frequencies for a number of channels or groups of channels.
2. Oscillator so arranged as to establish the carrier frequency of the output of an amplifier.
3. In radar, the master oscillator is used to control the entire operation of the set; it is used to determine the sweep time, the pulse repetition frequency, etc.

MASTER PLAN.

Document which presents in graphic, narrative, and tabular form, the present composition of an installation, and projects the orderly and comprehensive development necessary to perform its ultimate mission in the most efficient and economical manner.

MASTER PPI.

Plan-position indicator unit associated with a system console.

MASTER REFERENCE SYSTEM FOR TELEPHONE TRANSMISSION.

Adopted by the International Advisory Committee for Long Distance Telephony. A primary reference telephone system for determining, by comparison, the performance of other telephone systems and components with respect to the loudness, articulation, or other transmission qualities of received speech.

MASTER ROUTINE.

(Reference: SUBROUTINE.)

MASTER STAMPER.

Master used as a stamper to make pressings.

MASTER STATION.

In radionavigation, the station of a synchronized group that controls the emissions of the group.

MASTER SWITCH.

Switch that dominates the operation of contractors, relays or other magnetically operated devices.

MASTER-OSCILLATOR POWER AMPLIFIER.

Transmitter using an oscillator followed by one or more stages of RF amplification.

MAT. (MATERIAL, MATERIEL).**MATADOR.**

Surface-to-surface tactical bombardment guided missile developed for the Air Force. The nomenclature is TM-61. It is launched from a mobile platform by means of a solid fuel external booster rocker. Maximum speed is Mach 0.9 and range is 550 miles. The missile is powered by a turbojet engine and its gross weight is 11,000 pounds. It is 39.5 feet long, 4.5 feet in diameter, and has a wing span of 28.8 feet. A command guidance system is employed. Later models may employ the ATRAN system.

MATCHED IMPEDANCE.

Condition which exists when two coupled circuits are adjusted so that the impedance of one circuit equals the impedance of the other.

MATCHED PULSE.

(Reference: MATCHED PULSE INTERCEPTING.)

MATCHED PULSE INTERCEPTING.

System for intercepting calls on party lines in a terminal per-line office. Operates on a ground pulse which is matched in time with the intercepted station's particular ringing frequency.

MATCHED TERMINATION.

Termination which causes no reflection of energy.

MATCHED TRANSMISSION LINE.

Transmission line is said to be matched at any transverse section if there is no reflected wave at that section.

MATCHING.

Connecting two circuits or parts together with a coupling device in such a way that the impedance of either circuit will be equal to the impedance existing between the coupling terminals to which that circuit is connected.

MATCHING IMPEDANCE.

Impedance value that must be connected to the terminals of a signal-voltage source for proper matching.

MATCHING PLATE.

In waveguide technique a diaphragm used for matching purposes.

MATCHING STUB.

Device placed on a radio-frequency transmission line which varies the electrical length of the line. The impedance of the line can be adjusted in this manner.

MATCHING TRANSFORMER.

Transformer used for matching purposes.

MATHEMATICAL CHECK.

(Reference: CHECK, PROGRAMMED.)

MATRIX.

1. Rectangular array of symbols.
2. In color television, an array of coefficients symbolic of an operation to be performed; which operation results in a color coordinate transformation; to perform a color coordinate transformation by computation or by electrical, optical, or other means. Specifically it is the circuit section which combines I, Q and Y signals and transforms them into individual red, green and blue signals which are applied to picture tube grids.
3. Logical network in an electronic computer, whose configuration is a rectangular array of intersections of its input-output leads, with elements connected at some of these intersections. The network usually functions as an encoder or decoder.

MATRIXER.

Device which performs a color coordinate transformation by electrical, optical, or other means.

MATS. (MILITARY AIR TRANSPORT SERVICE).

Service within the Department of Defense, the chief responsibility of which is to provide air transportation for all departments and agencies of the Department of Defense and for other government agencies as authorized.

MATTER.

Physical entity which possesses mass.

MAX.

(Reference: MASTER OFFICE.)

MAX (MAXIMUM).

(Reference: MAXIMUM.)

MAXIMA/MINIMA-RADAR.

Regions of maximum and minimum return from the transmitted pulse caused by additive and subtractive combinations of the direct and reflected waves. A plot of this data is usually known as a null pattern or fade chart.

MAXIMUM.

Highest value occurring during a given period.

MAXIMUM AVERAGE POWER OUTPUT.

In television, the maximum average power output is the maximum of output power that can occur under any combination repetitive modulation cycle.

MAXIMUM KEYING FREQUENCY.

Frequency in cycles per seconds numerically equal to one-half the number of critical areas of the subject copy scanned per second. (Reference: MAXIMUM MODULATING FREQUENCY.)

MAXIMUM LIMITS AUTHORIZATIONS.

Maximum number of PBX stations (main and bridged) which may be installed on authority of the base commander, and the maximum monthly expenditures for miscellaneous telephone equipment which he is authorized to incur.

MAXIMUM MODULATING FREQUENCY.

Maximum frequency produced by the scanning process which must be transmitted to prevent degradation in the recorded copy.

MAXIMUM PERCENTAGE MODULATION.

Highest percentage of modulation that can be

used in a transmitter without producing harmonics of the modulating frequency in excess of those permitted by regulations.

MAXIMUM RANGE.

For ground radar sets, the maximum-slant range at which a target possessing an echoing area equivalent to one square meter can be detected under average conditions.

MAXIMUM SET.

Control for sweep calibration at maximum range.

MAXIMUM SIGNAL LEVEL.

In an amplitude modulated system, the level corresponding to copy black or copy white, whichever has the higher amplitude.

MAXIMUM SOUND PRESSURE.

Maximum sound pressure for any given cycle is the maximum absolute value of the instantaneous sound pressure during that cycle. The unit is the dyne per square centimeter.

MAXIMUM SYSTEM DEVIATION.

In frequency modulation, the greatest deviation in frequency specified in the operation of the system.

MAXIMUM UNDISTORTED OUTPUT.

1. Maximum power delivered under specified conditions with a total harmonic output not exceeding a specified percentage.

2. Maximum audio power output which an amplifier will deliver with no more than five per cent distortion of wave form.

3. Maximum audio-frequency output power that a radio receiver or audio-frequency amplifier can deliver without having more than a specified value (usually 10 percent) of total harmonic distortion.

MAXIMUM UNDISTORTED POWER.

Maximum power obtained with less than five per cent means effective distortion.

MAXIMUM USABLE FREQUENCY.

Upper limit of the frequencies that can be used at a specified time for radio transmission between

two points and involving propagation by reflection from the regular ionized layers of the ionosphere.

Note. Higher frequencies may be transmitted by sporadic and scattered reflections.

MAXWELL.

Centimeter-gram-second electromagnetic unit of magnetic flux. It is equal to one gauss per square centimeter, or to one magnetic line of force.

MAXWELL'S EQUATIONS.

Series of fundamental equations developed by J. C. Maxwell to express radiation phenomena in mathematical form and to describe the condition at any point under the influence of varying electric and magnetic fields.

MAXWELL'S LAW.

A moveable portion of a circuit will always move in such a direction as to give maximum flux linkages through the circuit.

MAXWELL-TURN.

Unit of magnetic linkage, equal to one magnetic line of force passing through one turn of a circuit.

MAYDAY.

International distress call for radiotelephone communication. It is derived from the French pronunciation of M'aidez, meaning help me.

MB (MILLIBAR).

Unit of pressure, used in measuring atmospheric pressure, which is approximately equal to 0.0295 inch of mercury (1,000 dynes per square centimeter) at 32°F. (0°C.) and under standard conditions of gravity. Standard atmospheric pressure at sea level is 1013 millibars.

MB (MUNITIONS BOARD).

Board established by the National Security Act of 1947 under the Secretary of Defense to support certain strategic and logistic plans prepared by the Joint Chiefs of Staff.

MBCA (MUNITIONS BOARD CATALOGING AGENCY).**MC FAILURE.**

Failure of a circuit under marginal checking conditions which does not occur under normal operating conditions. However, imminent failure, even under normal conditions, is indicated.

MC (MEDICAL CORPS).

Corps in the Air Force medical service whose members are doctors of medicine.

MC (MEGACYCLE).

Unit of frequency. One million cycles per second.

MC (MILITARY COMMITTEE.)**MCAB (MARINE CORPS AIR BASE).****MCAF (MARINE CORPS AIR FACILITY).****McGILL FENCE.**

Radar warning chain or fence across Canada. It is also known as the Mid-Canada Line. The chain is equipped with devices mainly developed by McGill University. It will be largely automatic in operation, and therefore, will require a minimum of personnel. The radar equipment is of a special type and the chain is intended only to give warning that aircraft are approaching.

MCIS (MULTIPLE CORRIDOR IDENTIFICATION SYSTEM).

Means of identifying aircraft used by an air defense command.

MCLEOD GAGE.

Device for measuring the pressure of a highly rarefied gas by compressing a portion of the gas, measuring the pressure thus magnified, then calculating the original pressure.

MCNALLY TUBE.

Velocity modulated vacuum tube designed to produce low-power UHF oscillations. It is used as a local oscillator in some radar receivers.

MCS (MEGACYCLES PER SECOND).**MCT (MOBILE CONTROL TOWER).****MCW (MODULATED CONTINUOUS WAVE).**

Carrier waves, the amplitude or frequency of which is varied in accordance with the signal to be transmitted.

MD (MANUAL DATA).

Data transmitted from air-defense activities other than SAGE long-range or gap-filler radars for use in a computer.

MDAA (MUTUAL DEFENSE ASSISTANCE ACT).

MDAP (MUTUAL DEFENSE ASSISTANCE PROGRAM.)

Program of military assistance given by the US to foreign nations participating in the defense alliances for a free world.

MDF (MANUAL DIRECTION FINDER).

Rotatable loop radio compass operated manually.

MDI (MAGNETIC DIRECTION FINDER).

MDS (MANUAL DATA SUPERVISOR).

In air defense, a noncommissioned officer responsible to the air surveillance officer for supervising the insertion of manual data into a computer.

MDS (MINIMUM DISCERNIBLE SIGNAL).

Receiver input power level that is just sufficient to produce a discernible signal in the receiver output, used as a receiver sensitivity test.

MDT (MANUAL DATA TECHNICIAN).

In air defense, an airman responsible to the air surveillance officer for inserting manual data into the computer.

MDW (MILITARY DISTRICT OF WASHINGTON).

MEACONING.

System of receiving beacon signals and rebroadcasting them on the same frequency to confuse navigation. The meaconing stations cause inaccurate bearings to be obtained by aircraft or ground stations.

MEAL. (MASTER EQUIPMENT AUTHORIZATION LIST).

MEAN CARRIER FREQUENCY.

Average carrier frequency of a transmitter, corresponding to the resting frequency in a frequency-modulated system.

MEAN FREE PATH.

For sound waves in an inclosure, the average distance sound travels in the inclosure between successive reflections.

MEAN SPHERICAL CANDLEPOWER.

Average of the candlepower values of a light source in all directions.

MEANS OF COMMUNICATIONS.

Medium by which a message is conveyed from one person or place to another; includes electromagnetic waves, sound waves, visual, and messenger.

MEAS (MEASURE OR MEASUREMENT).

MEASURED SERVICE.

Telephone service for which charge is made according to the measured amount of usage.

MEASUREMENT RANGE OF AN INSTRUMENT.

Part of the total range throughout which the requirements for accuracy are to be met.

MECH (MECHANIC, MECHANICAL).

MECHANICAL AXIS.

Name given to the Y piezoelectric axis of a quartz crystal.

MECHANICAL BANDSPREAD.

Use of a vernier tuning dial or other mechanical means to provide greater angular rotation of a control knob for a given tuning range, to simplify tuning in crowded short-wave bands.

MECHANICAL COMPLIANCE.

Displacement of a mechanical element per unit of force. It is the reciprocal of stiffness, is analogous to capacitance in an electrical system, and is expressed in centimeters per dyne.

MECHANICAL DAMPING.

Mechanical resistance which is generally associated with the moving parts of a cutter or a reproducer.

MECHANICAL FILTER.

Electromechanical device capable of sharp cutoff frequency discrimination.

MECHANICAL IMPEDANCE.

Complex quotient of the alternating force applied to the system by the resulting alternating linear velocity in the direction of the force at its point of application.

MECHANICAL JOINT.

Joint in which cables or other conductors are clamped together mechanically without the use of solder.

MECHANICAL OHM.

Mechanical resistance, reactance, or impedance; has a magnitude of one mechanical ohm when a force of one dyne produces a velocity of one centimeter per second.

MECHANICAL REACTANCE.

Magnitude of the imaginary component of the mechanical impedance.

MECHANICAL RECORD.

Electrical transcription of phonograph record.

MECHANICAL RECORDING HEAD.

Electromechanical transducer which transforms an electrical input into a mechanical output, typified by mechanical motions which may be inscribed into a recording medium by a cutting stylus.

MECHANICAL RECTIFIER.

Rectifier in which rectification is accomplished by mechanical action.

MECHANICAL RESISTANCE.

Real component of mechanical impedance.

MECHANICAL SCANNING.

Use of a beam of light controlled by a rotating scanning disk, rotating mirror, or other mechanical device, to break up a scene into a rapid succession of narrow lines as required for conversion into electrical impulses in a television system.

MECHANICAL TELEVISION SYSTEM.

Television system in which moving mechanical devices are employed at both the transmitter and receiver for scanning purposes.

MECHANICAL WAVE FILTER.

Filter designed to separate mechanical waves of different frequencies.

MECHANISM OF RECORDING INSTRUMENT.

Mechanism of a recording includes: (a) arrangement for producing and controlling the motion of the marking device; (b) marking device; (c) device (clockwork, constant-speed motor, or

equivalent) for driving the chart at a controlled speed; (d) parts necessary to carry the chart.

MECZ (MECHANIZED).

Of or pertaining to the use of equipment or weapons operated or driven by some type of motor power.

MED (MEDITERRANEAN).**MED (MEDIUM).**

(Reference: MEDIUM.)

MEDIAN.

Statistical measure of the middle or central tendency of a group of data. It is that value which has the same number of observations about it, as below it. The mean or arithmetic average is also a measure of central tendency. In a group of data which are symmetrical about the middle, the median is equal to the mean. On the control chart, the median is found by merely drawing a horizontal line where the number of plots above it equals the number below it.

MEDIUM.

Substance or space through which a wave can travel.

MEDIUM FREQUENCY.

Federal Communications Commission designation for the band from 300 to 3,000 kilocycles in the radio spectrum.

MEDIUM FREQUENCY BAND.

Frequencies ranging from .3 to 3 MC.

MEDIUM RANGE.

Classification of ground radar sets by slant range. Applied to equipment with a maximum range exceeding 75 miles but less than 150 miles.

MEDIUM SCALE MAP.

Map having a scale from 1:100,000 exclusive to 1:1,000,000 inclusive.

MEG.

Prefix meaning one million.

MEGABAR.

Absolute unit of pressure equal to one million bars.

MEGACYCLE.

One million cycles.

MEGATRON.

One of a class of tubes characterized by the arrangement of the electrodes in parallel planes or layers, providing very low interelectrode capacitance along with high power output at extremely high frequencies.

MEGGER.

High-range ohmmeter having a built-in, hand-driven, generator as a direct-voltage source, used for measuring insulation resistance values and other high resistances. Also used for continuity, ground, and short-circuit testing in general electrical power work.

MEGOHM.

One million ohms.

MEISSNER OSCILLATOR.

Electron tube oscillator in which the grid and plate circuits are inductively coupled through an independent resonant circuit which determines the frequency.

MEL.

Unit of pitch; a simple tone of frequency 1,000 cps, 40 db above a listener's threshold, produces a pitch of 1,000 mels. The pitch of any sound, that is judged by the listener to be n , times that of the one mel tone is n mels.

MELODEON.

Term used to designate the AN/ARR-8 broadband panoramic receiving set which is used generally for countermeasures reception. It presents as vertical pips, all types of electromagnetic radiation received. Presentation is on a frequency-calibrated cathode ray indicator screen. A fifty milliwatt output provides aural signals when manually tuning. Calibration markers for positioning the sweep with respect to the fixed scale are crystal controlled. Sweep width is 120 MCS, with a 2 MC frequency resolution. The receiver has two bands with a range of 70 to 300 MCS. It can be operated on the low or high frequency bands or on both simultaneously. The receiver will operate on 115 volt, single phase, ac power, 380 to 1000 cps, or from a 24 to 28 volt dc source.

MELTING TIME OF FUSE.

Time required for the current to melt the fuse link under the conditions specified, as indicated by the severance of the link.

MEMORANDUM RECEIPT.

Issue of turn-in slip reflecting the transfer of responsibility on a loan basis from one individual to another.

MEMORY.

(Reference: STORAGE.)

MEMORY CAPACITY.

(Reference: STORAGE CAPACITY.)

MER (MERCHANT).

MERCURY.

Silvery white liquid metal that becomes a solid at -40° Fahrenheit. It is used in mercury switches and in many electronic tubes. The vapor of mercury ionizes readily and conducts electricity.

MERCURY BAROMETER.

Instrument for measuring the pressure of the atmosphere, consisting of a vertical glass tube containing mercury. The upper end of the tube is closed to form a practically perfect vacuum above the mercury, while the lower end rests in a mercury-filler cup. The column is sustained by the pressure of air against the mercury in the cup. A suitable scale alongside the glass tube measures the height of the mercury column. Normal atmospheric pressure is around 76 centimeters of mercury.

MERCURY CELLS.

Electrolytic cells having mercury cathodes with which the deposited alkali metal forms an amalgam.

MERCURY MOTOR METER.

Motor-type meter in which a portion of the rotating element is immersed in mercury, which serves to direct the current through the driving element.

MERCURY RECTIFIER.

Mercury-arc rectifier.

MERCURY SWITCH.

Electric switch made by placing a large globule

of mercury in a metal or glass tube, having electrodes arranged in such a way that tilting the tube will cause the mercury to move and make or break the circuit.

MERCURY-ARC RECTIFIER.

Rectifier which makes use of the rectifying properties of an electron-emitting cathode and nonelectron-emitting anodes inclosed in a chamber containing mercury vapor.

MERCURY-VAPOR LAMP.

Glow lamp in which mercury vapor is the gas that is ionized by the flow of electric current and produces a luminous glow discharge.

MERCURY-VAPOR RECTIFIER.

Rectifier tube consisting of a diode containing mercury vapor which, when ionized by the action of the positive plate, permits full cathode emission current to flow with only a small voltage drop in the tube.

MERCURY-VAPOR TUBE.

Gas tube in which the active contained gas is mercury vapor.

MERGED.

Joining of two separate sets of radar data represented by individual tracks to such a degree that they may be carried as a single track.

MERIDIAN.

Great circle path between the North and South poles.

MERRY-GO-ROUND V BEAM.

Nickname for a combination early warning and height-finding radar, AN/CPS-6. The height-finding feature is obtained by the V beam technique. The set can be used for early warning, height finding, ground controlled intercept, and traffic control. It is air-transportable and weighs 84,000 pounds. The set transmits a pulse signal and has a range of 270 miles, with a peak power of 750 kilowatts. Five transmitters are used which cover a total band of 2700-3019 MCS.

MESH.

Series of branches that form a single closed loop.

MESON.

Subatomic particle resulting from cosmic radiation. It has a charge equal to that of an electron but has a much greater mass.

MESOTRON.

Particle having the same unit negative charge as an electron but a mass intermediate between that of the electron and the proton. Produced by cosmic radiation impinging on gas molecules, or actually forming a part of cosmic rays.

MESSAGE.

Thought or idea expressed briefly in plain or secret language, prepared in a form suitable for transmission by any means of communication.

BASEGRAM. Message sent to a base for delivery to a command, ship or aircraft on arrival.

BOOK. Destined for two or more addressees and is of such nature that the originator considers that no addressees need to be informed of any other addressees. Each addressee must be indicated as action or information.

CODRESS. Type of message in which the complete address is contained only in the encrypted text.

DROP. Message dropped from an aircraft to a ground or surface unit.

DUMMY. Message sent for some purpose other than its content.

GENERAL. Messages which have a wide standard distribution, termed general messages. They are assigned an identifying title and usually a sequential serial number.

MISROUTED. Message bearing an incorrect routing instruction.

MISSENT. Message which bears the correct routing instruction but has been transmitted to a station other than indicated.

MULTIPLE ADDRESS. Message which is destined for two or more addresses, each of whom is informed of all the addresses. Each addressee must be indicated as action or information.

PLAINDRESS. Type of message in which the originator and addressee designations are indicated externally of the text.

PROCEDURE. Message in which the text contains only prosigns, operating signals, addressee designation(s), identification of messages, parts of messages and amplifying data as necessary.

Q. Naval message by which information concerning allied and enemy minefields, searched channels and secret, confidential or restricted navigational aids or dangers is promulgated.

REDLINE. Designation for certain operational immediate messages employed between Headquarters, USAF, and the commanders of major air commands, or between the commanders of major air commands.

SERVICE. Message between communications personnel pertaining to any phase of traffic handling, communications facilities or circuit conditions.

SINGLE ADDRESS. Message destined for only one addressee.

MESSAGE AUTHENTICATION.

Security measure designed to establish the authenticity of a message by means of an authenticator within the transmission derived from certain predetermined elements of the message itself.

MESSAGE CENTER.

Agency charged with the responsibility for acceptance, preparation for transmission, receipt and delivery of messages.

MESSAGE HEADING.

Part of a message containing all components preceding the text.

MESSAGE INDICATOR.

Element placed within a message to serve as a guide to the selection or derivation and application of the correct key to facilitate the prompt decryption of the message.

MESSAGE KEYING ELEMENT.

That part of the key which changes with every message.

MESSAGE PRECEDENCE DESIGNATIONS.

(Reference: PRECEDENCE DESIGNATIONS.)

MESSAGE SERVICE.

Message between communications personnel pertaining to any phase of traffic handling, communication facilities, or circuit condition.

MESSAGE UNIT.

One call within an exchange limit. Calls outside the commercial exchange limit are measured and charged at two or three such units, etc., in computing a customer's bills.

MESSENGER.

(Reference: SUSPENSION STRAND.)

MET. (METEOROLOGICAL).

METABOLONS.

Products of successive disintegration of radioactive materials.

METADYNE.

Direct-current machine used in various forms for voltage regulation or voltage transformation, and having more than two brushes per pair of poles. British term.

METAL DETECTOR.

Electronic device for detecting concealed metal objects.

METAL MASTER.

Metal disk recording negative produced directly from the original recording.

METAL TUBE.

Vacuum tube having a metal envelope, with electrode leads passing through glass beads fused into the metal housing.

METAL-TANK MERCURY-ARC RECTIFIER.

Mercury-arc rectifier with the anodes and mercury cathode inclosed in a metal container or chamber.

METALLIC CIRCUIT.

Wire circuit of which the ground or earth forms no part.

METALLIC INSULATOR.

Shorted quarter-wave section of transmission line. It acts as an electrical insulator at the frequency of which it is a quarter wave length.

METALLIZED RESISTOR.

Fixed resistor, originally one in which the resistance element was a thin film of metal deposited on the surface of a glass or ceramic rod or tube. The term is now a trade name used by one company for carbon resistors in general.

METALLOGRAPHY.

Science which deals with the internal structure of the physical constitution of metals.

METEOR.

Shooting star; small, solid, interplanetary particles falling into the earth's atmosphere; usually consumed by fire from friction.

METEORITE.

Solid bodies which enter the earth's atmosphere from outer space and penetrate to the surface.

METEOROLOGICAL AIDS SERVICE.

Service of emissions of special radio signals intended solely for meteorological, including hydrological, observations and exploration.

METEOROLOGICAL OFFICER.

Member of the SAGE combat or direction center weather station responsible for the receipt, processing, and dissemination of weather information for a given area of responsibility.

METEOROLOGY.

Science which deals with the earth's atmosphere, weather, and climate conditions.

METEORS.

Small celestial bodies that enter the earth's atmosphere at terrific speed and burn; combustion being caused by friction with the air.

METER.

1. Term used to designate any type of measuring device including all types of electrical measuring instruments.
2. Unit of length in the metric system of measurement. One meter is equal to 39.37 inches,

3.281 feet, or 1.094 yards in english units of length.

CALL. Electrically operated counter which registers the number of calls completed by various units.

OVERLOAD. Electrically operated counter which registers the number of times all trunks are busy between the various office units.

METER CORRECTION FACTOR.

Factor by which the reading of a meter must be multiplied to compensate for meter errors and to obtain the true reading.

METER DISPLAY.

Display in which the indicators are given by one or more pointer instruments.

METER-AMPERE.

Measure of the strength of a radio transmitting station. The number of meter-amperes is found by multiplying the number of amperes of maximum current in the antenna by the number of meters of the height of the antenna.

METER-CANDLE.

Illumination on a surface one meter away from a point source of one candle.

METER-KILOGRAM-SECOND SYSTEM.

Absolute system of units, based on the meter, kilogram, and second as fundamental units and extended to electrical effects and by the measurement of potential difference by the power per unit current. The mechanical units of the system are based on unity as the proportionality factor in the recognized equations of mechanics, plus insertion of a new unit of force for which the name Newton has been proposed. Each of the electrical units of the mks system has the same name and the same value as the corresponding unit of the practical system of electrical units.

METER-TYPE RELAY.

Meter movement in which the contact-bearing pointer performs the same function as the armature of a relay.

METO (METEOROLOGICAL OFFICER).

Member of the SAGE combat or direction center weather station responsible for the receipt, processing, and dissemination of weather information for a given area of responsibility.

METO (MIDDLE EAST TREATY ORGANIZATION).

METRIC.

Security warning used as a designator for certain types of information within the Brussels Treaty Organization. The word metric bears the security classification of restricted. Related meaning of the work metric is secret.

METRIC SYSTEM.

Decimal system of weights and measures used extensively by scientists, and also used for ordinary purposes outside of the United States and Great Britain.

METRIC WAVES.

British classification for wave lengths between 1 and 10 meters.

METROLOGY.

Science which deals with systems of units and methods of measurements.

MEW (MICROWAVE EARLY WARNING).

High power, long range radar equipment intended to detect approach targets as early as possible. The emphasis is on detection and approximate determination of azimuth and distance. Accurate determination of range and direction is not as important at long ranges as it is for intercept or other precision operations.

MEX FACILITY.

New facility within the AIRCOM complex which is designed to remove the teletypewriter patching requirements from Technical Control and remove the voice service (point-to-point and air/ground) from base switchboards. MEX facility is under the operational control of the CTCF OIC.

MF (MEDIUM FREQUENCY).

Frequency from 300 to 3000 KC.

MFR (MANUFACTURER).

MFS (MILITARY FLIGHT SERVICE).

MGT (MANAGEMENT).

That part of administration concerned with the procedures, techniques, and processes employed in an operation.

MH.

Nondirection radio beacon (homing), with power less than 50 watts.

MH BEACON.

Nondirectional radio homing beacon having an output power of 50 watts or less.

MHF (MEDIUM HIGH FREQUENCY).

MHO.

Unit of conductance or admittance; the reciprocal of the ohm.

MIC (MICROPHONE).

Device for converting sound energy into electrical energy.

MICA.

One of the most important dielectric materials used in radio and electrical work. A mineral which occurs in laminated crystalline form. It is possible to split sheets of mica along the laminations into layers of about one-fourth of one thousandth of an inch in thickness.

MICA CAPACITOR.

Fixed capacitor employing mica sheets as the dielectric material between adjacent plates. The complete units are usually encased in molded bakelite.

MICHELSON-MORLEY EXPERIMENT.

Experiment made in 1887 indicating that the earth carries the ether around with it. The velocity of light as measured first in the direction of, then at right angles to, the earth's motion was found to be the same. The experiment was confirmed in 1928.

MICHIGAN.

Research and development project established in May 1953 at the University of Michigan under a tri-service charter, administered by the U.S. Army Signal Corps. Its objective is the continuing improvement of the capabilities of the Armed Forces for battlefield surveillance, defined as:

the all-weather surveillance by any technical means of the region extending approximately 200 miles beyond the main line of resistance; and the overall system required to correlate and supply, rapidly and effectively, the information derived from the surveillance. The work of the project toward this objective includes research and development on sensory devices and techniques for battlefield surveillance; research and development on means for handling surveillance data; integration of these and other surveillance devices into a continually improving battlefield surveillance system; and advising the military, as appropriate, on matters of research, development, and procurement on matters concerning battlefield surveillance. The activities of PROJECT MICHIGAN include basic system concepts and design, implementation of the design by continuing integration of improved subsystems; design and specification of subsystems and their evaluation by field test and simulation; development of data-processing techniques and sensory devices, and research review and analysis. The sensory-device work covers basic and applied research in the field of infrared, optics and vision, acoustics seismics, radar and communications.

MICKY.

Series of 3-cm airborne radars used for high-altitude bombing, search and navigation. Included in this series are the AN/APQ-13, AN/APQ-26, and AN/APS-15.

MICRO.

Prefix meaning one millionth.

MICRO-H.

Precision navigational and bombing system of the H type, or one which employs an airborne interrogator radar set and two ground responder beacons of known location. The airborne equipment determines its position from the replies of the beacons. The equipment operates in the microwave region.

MICROAMMETER.

Meter, used to measure extremely small currents, having a scale that reads in microamperes.

MICROAMPERE.

One-millionth of an ampere.

MICROFARAD.

One-millionth of a farad.

MICROHENRY.

One-millionth of a henry.

MICROHM.

One-millionth of an ohm.

MICROLOCK.

Minimum weight radio instrumentation system for a satellite.

MICROMETEORITES.

Small dust particles moving around the sun; may be debris from the formation of the solar system or interstellar dust coming into the solar system; may cause erosion and destruction of optical and other surfaces on vehicles moving at interplanetary speeds.

MICROMETER.

In the electric version, an instrument for measuring extremely small movements by converting them either into changes of capacitance or into changes in the reluctance of an air gap in a magnetic circuit.

MICROMHO.

One-millionth of a mho.

MICRO-MICRO.

Prefix meaning one-millionth of one-millionth.

MICRO-MICROFARAD.

One-millionth of a microfarad; picofarad.

MICRO-MICRON.

Unit of length that equals one-millionth of a micron or one-billionth of a millimeter.

MICRON.

Unit of length equal to one-millionth of a meter or one-thousandth of a millimeter.

MICROPHONE.

Device for converting sound energy into electrical energy.

CARBON. Microphone which depends for its operation upon the variation in resistance of carbon contacts.

CRYSTAL. Microphone which, for its operation, depends on the generation of an electric charge by the deformation of a body (usually crystalline) having piezoelectric properties.

ELECTROSTATIC. Microphone which, for its operation, depends upon variations of its electrostatic capacitance.

GRADIENT. Microphone, the output of which corresponds to a gradient of the sound of the sound pressure.

MOVING-COIL. Moving-conductor microphone in which the movable conductor is in the form of a coil.

MOVING-CONDUCTOR. Microphone in which the electric output results from the motion of a conductor in a magnetic field.

OMNIDIRECTIONAL. Microphone, the response of which is essentially independent of the direction of sound incidence. It should be noted that, in this case, omnidirectional refers to elevation as well as azimuth. In radio antenna practice, this is not necessarily the case.

PRESSURE. Microphone in which the electric output substantially corresponds to the instantaneous sound pressure of the impressed sound waves.

PUSH-PULL. Microphone which makes use of two like microphone elements actuated by the same sound waves and operating 180 degrees out of phase.

RIBBON. Moving-conductor microphone in which the moving conductor is in the form of a ribbon which is directly driven by sound waves.

VARIABLE-RELUCTANCE. Microphone which for its operation, depends on variations in the reluctance of magnetic circuit.

VELOCITY. Microphone in which the electric output substantially corresponds to the instantaneous particle velocity in the impressed sound wave.

MICROPHONE ADAPTER.

Device that slips under a tube, or is otherwise connected to a radio receiver, and provides terminals to which a microphone can be connected to convert the receiver into a public address system. Phonograph pick-up connections to a radio receiver can be made in a similar manner.

MICROPHONE AMPLIFIER.

Audio-frequency amplifier that amplifies the output of a microphone which is connected to its input prior to sending the audio-frequency signal over a transmission line to the main audio-frequency amplifier. (Reference: MICROPHONE PREAMPLIFIER.)

MICROPHONE BOOM.

Adjustable crane from which a microphone is suspended.

MICROPHONE BUTTON.

Button-shaped telescoping container filled with carbon particles and serving as the resistance element of a carbon microphone.

MICROPHONE CABLE.

Special shielded cable used to connect a microphone to a microphone amplifier.

MICROPHONE PREAMPLIFIER.

Microphone amplifier.

MICROPHONE STAND.

Stand used to support a microphone in a desired position above the floor or on a table.

MICROPHONE TRANSFORMER.

Iron-core transformer used for coupling certain types of microphones to a microphone amplifier, transmission line, or main audio-frequency amplifier.

MICROPHONIC.

Condition in which mechanical movement of a vacuum tube, variable capacitor, or other part in an amplifier system causes corresponding variations in circuit current; heard as noise or howling. Liable to produce circuit noise as a result of mechanical movement. The resultant noise is termed microphonics.

MICROPHONIC NOISE.

Noise caused by mechanical vibration of the elements of the tubes.

MICROPHONIC TUBE.

Vacuum tube in which the electrodes are insufficiently rigid and hence liable to vibrate and produce microphonic noise.

MICROPHONICS.

Paneling effect noticeable mostly in the constant density areas of the recording due to the generation of an extraneous signal by vibration of some components in the facsimile system, usually an electron tube element.

MICROPHONISM.

1. Production of noise as a result of magnetic shock or vibration which is called microphonics.
2. Quasi-periodic voltage output of a tube produced by mechanical resonances of its elements as a result of mechanical impulse excitation.
3. Periodic voltage output of a tube produced by mechanical resonances of its elements as a result of sustaining mechanical excitation.
4. Output voltage of a tube action as an electrical transducer of mechanical energy.

MICROPHOTOMETER.

Photometer providing a high degree of accuracy in illumination measurements. In one form, the changes in illumination are picked up by a phototube and converted into current variations that are amplified by vacuum tubes.

MICRORADIOMETER.

Instrument for measuring very weak radiation.

MICRORAY OSCILLATOR TUBE.

Triode tube used for generating extremely high frequencies that have an oscillating electrode constructed like the grid of an ordinary triode and having a reflecting electrode constructed like the plate of a triode.

MICROSECOND.

One-millionth of one second.

MICROVOLT.

One-millionth of one volt.

MICROVOLTMETER.

Highly sensitive voltmeter that measures millionths of one volt.

MICROVOLTS PER METER.

Potential difference, in microvolts, developed between an antenna system and ground divided by the distance, in meters, between the two points.

MICROWAVE

Radio transmission using a very short wavelength of 20 centimeters or less.

MICROWAVE OSCILLATOR.

Oscillator that generates frequencies higher than about 300 megacycles (wavelengths shorter than about one meter).

MICROWAVE RADIO.

Radio transmission using wavelengths of 30 centimeters or less.

MICROWAVE RADIO RELAY.

Transmission of long-distance telephone calls, sound, and television broadcast programs by means of highly directional high-frequency radio waves that are received and transmitted from one station to another until a terminal is reached.

MICROWAVE-RELAY SYSTEM.

Series of ultra-high-frequency radio transmitters and receivers comprising a circuit for handling communications (usually multichannel).

MICROWAVES.

Radio waves less than one meter in length. Corresponding to frequencies above 300 megacycles.

MID. (MIDDLE EAST ICAO REGION).**MID. (MIDDLE EAST REGION).****MIDDLE MARKER.**

Instrument landing system marker which is located on a localizer course line at a distance of about 3500 feet from the approach end of the runway.

MIDGETAPE.

Pocketsized recorder developed by the Mohawk Business Machines Corporation. It is completely battery-operated and cartridge-loaded. No tape threading is necessary. Hearing aid type batteries

which snap into the device have a life of over 45 hours. The usefulness of this small recorder may be extended by the use of such accessories as a wristwatch microphone, a shoulder-holster carrying case, and a two-way telephone recording adapter.

MIDSECTION.

Half way between load coils or one-half of a loading section.

MIKE.

Slang for microphone.

MIL. (MILITARY).

1. Pertaining to war or to the traditions and disciplines of war.
2. Pertaining to a nation's armed forces, including its Army, Navy, and Air Force.

MIL.

1. Unit of length equal to one-thousandth of an inch, used in specifying diameters of round conductors.
2. Measure of angle; the angle subtended by an arc having a length of 0.001 of its radius. The angle subtended by a one-foot arc at a distance of 1,000 feet. One mil equals 0.0575 degree and 17.78 mils equals approximately one degree.

CIRCULAR. Area of a circle which is one-thousandth of an inch in diameter. The one-thousandth part of an inch is called one mil. The circular mil as a unit of area is used in measuring the cross-sectional area or size of conductors.

MILE.

Unit of distance used commonly in the US.

NAUTICAL. Unit of distance which is equal to one minute of arc of a great circle of a sphere having an area equal to that of the earth. The standard length in the United States is 6080.20 feet, or 1.15155 statute miles.

RADAR NAUTICAL. Time interval, approximately 12.361 microseconds, required for radio energy to travel one nautical mile and return; a total of two nautical miles.

WIRE. Unit of measure of the length of two-conductor wire between two points. The length of the route multiplied by the number of circuits gives the number of wire-miles. (This does not include the slack for ties, overheads, etc., which for computation purposes is an additional 50 percent per wire-mile).

MILEAGE.

Distance from the central office or its base rate boundary to a subscriber, used for rate determination. Measured in airline distance or route distance, and in miles or feet.

MILITARY AFFILIATE RADIO SYSTEM.

Amateur radio system sponsored by the military services to develop the technical ability of MARS members, and to promote study and experimentation in military radio communications.

MILITARY AIR TRAFFIC SERVICE.

System to provide for the safe and expeditious movement of military air traffic. This service includes the control of air traffic within air-drome control zones and approach control zones and the operation of designated air traffic control centers.

MILITARY CHARACTERISTICS.

Those characteristics of equipment upon which its ability to perform desired military functions depends.

MILITARY FLIGHT SERVICE INTERPHONE COMMUNICATIONS SYSTEM.

Integrated network of commercial telephone facilities which are leased by the Government to provide an efficient and expeditious means of passing messages pertaining to, and necessary for, the movement of military air traffic.

MILLER BRIDGE.

Type of bridge circuit for measuring amplification factors of vacuum tubes.

MILLER EFFECT.

Increase in the effective grid-cathode capacitance of a vacuum tube due to the charge induced electrostatically on the grid by the plate through the grid-plate capacitance.

MILLI.

Prefix meaning one thousandth.

MILLIAMETER.

Meter that measures current values in milliamperes.

MILLIAMPERE.

Unit of current equal to one-thousandth of an ampere.

MILLIBAR.

Unit of pressure, used in measuring atmospheric pressure, which is approximately equal to 0.0295 inch of mercury (1,000 dynes per square centimeter) at 32°F. (0°C.) and under standard conditions of gravity. Standard atmospheric pressure at sea level is 1013 millibars.

MILLIHENRY.

Unit of inductance equal to one-thousandth of a henry.

MILLILAMBERT.

Unit of brightness equal to one-thousandth of a lambert.

MILLIMETER.

Metric unit of length equal to one-thousandth of a meter, or approximately 1/25th inch.

MILLIMICRON.

One-millionth part of a millimeter.

MILLIOHM.

One one-thousandth of an ohm.

MILLIROENTGEN.

One one-thousandth of a roentgen.

MILLIVOLT.

Unit of voltage equal to one-thousandth of a volt.

MILLIVOLTMETER.

Voltmeter that measures voltage values in millivolts.

MILLIVOLTS PER METER.

Potential difference, in millivolts, developed between an antenna system and ground divided by the distance, in meters, between the two points.

MILLIWATT.

Unit of power equal to one-thousandth of a watt.

MIN (MINE, MINECRAFT, OR MINUTE).**MINIATURE THYRATRON.**

Small gas-type grid-controlled tetrode, such as the type 2D21 which is 1-7/8 inches high and weighs 1/2 ounce.

MINIATURE TUBES.

Small electron tubes.

MINIFRON.

Portable recording which can be carried in a person's coat pocket.

MINIMIZE.

During a state of emergency, in peace or war, instructions to reduce traffic which is not directly connected with the emergency, may be made by the promulgation of the word minimize which has the following signification: It is now vital that normal message and telephone traffic be drastically reduced in order that messages connected with the present emergency shall not be delayed.

MINIMUM.

Lowest value of any quantity occurring during a given period.

MINIMUM DISCERNIBLE SIGNAL.

Receiver input power level that is sufficient to produce a discernible signal in the receiver output, used as a receiver sensitivity test.

MINIMUM FLASHOVER VOLTAGE.

Crest value of the lowest voltage impulse of a given wave shape and polarity which causes flashover.

MINIMUM REQUIRED FIELD INTENSITY.

Lowest value that the incident signal strength can be for satisfactory communications. This is determined by the noise level at the receiver.

MINIMUM SIGNAL LEVEL.

Level corresponding to the copy white or copy black signal, whichever is the lower.

MINIMUM WAVELENGTH.

Shortest wavelength in an X-ray spectrum produced by an X-ray tube. It is definitely related

to the maximum voltage applied to the tube, in accordance with the Planck-Einstein quantum equation. Reference: QUANTUM LIMIT.)

MINITRACK.

System for tracking artificial satellite by means of radio waves transmitted from the vehicle itself; several ground stations are required.

MINK.

Radar data optical display device.

MINOR APEX FACE.

One of the three smaller sloping faces near but not touching the apex (pointed end) of a natural quartz crystal. The larger three sloping faces are the major apex faces.

MINOR BEND.

Rectangular waveguide bent so that throughout the length of the bend a longitudinal axis of the guide lies in one plane which is parallel to the to narrow side of the waveguide.

MINOR CYCLE.

In a storage device which provides serial access to storage positions, the time interval between the appearance of corresponding parts of successive words.

MINOR FACE.

One of the three smaller sides of a natural hexagonal quartz crystal.

MINOR ITEMS.

Use or installation type items which are required to place a major item or combinations of major items into an integrated functional condition to satisfy a specific portion of an operational requirement. Minor items will be designated in SFEL's for the guidance of engineering agencies. Examples of minor items are hardware and hook-up wire.

MINOR RELAY STATION.

Tape relay station is designated as a minor relay station when it has tape relay responsibility but does not provide an alternate tape relay route.

MINUTE.

Unit of measurement of part of a circle equal to 1/60 of a degree.

MIRROR GALVANOMETER.

One having a small mirror attached to the moving element to permit use of a beam of light as an indicating pointer.

MIRROR REFLECTION ECHOES.

Multiple reflection echoes that are caused by radar beam being reflected from a large flat surface, as the side of an aircraft carrier, and subsequently striking other nearby targets.

MIS (MANUAL DATA SUPERVISOR).

Noncommissioned officer responsible to the air surveillance officer for supervising the insertion of manual data into a computer.

MIS (MISSION).

(Reference: MISSION.)

MISMATCH.

Condition in which the impedance of a source does not match or equal the impedance of the connected load.

MISMATCHING FACTOR.

Ratio of the load current that would be delivered by a particular generator to a particular load without matching to the load current obtained when generator and load impedances are matched. (Reference: REFLECTION FACTOR, TRANSITION FACTOR.)

MISROUTED MESSAGE.

Message bearing an incorrect routing instruction.

MISSENT MESSAGE.

Message which bears the correct routing instruction but has been transmitted to a station other than that indicated.

MISSILE.

Rocket used as a weapon.

MISSION.

1. In communications usage, particularly in cases of radio monitor stations, telegraph and tape relay stations and network stations, it is an assigned task or duty pertaining to time schedules, station contacts, frequency coverage, responsibility and logging procedures.
2. In common usage, especially when applied to lower military units, a duty or task assigned to an individual or unit.

MISTAKE.

(Reference: ERROR.)

MIT (MANUAL DATA TECHNICIAN).

Airman responsible to the air surveillance officer for inserting manual data into the computer.

MIXED HIGHS.

Method of reproducing very fine picture detail by transmitting high frequency components as part of luminance signal for achromatic reproduction in color picture.

MIXER.

1. Device ordinarily consisting of one or more potentiometers for combining the audio-frequency output signals of two or more microphones, or other audio-frequency signal sources in any desired proportion at the input of a main audio-frequency amplifier.

2. Stage in a heterodyne receiver in which the incoming signal is mixed with the signal from the local oscillator to produce the intermediate-frequency signal.

3. Detector in a superheterodyne receiver in which there is introduced a heterodyne frequency.

MIXER STAGE.

Stage in a superheterodyne receiver in which the radio-frequency signal from the local oscillator is combined with the incoming modulated radio-frequency signal to produce the modulated intermediate-frequency signal.

MIXER TUBE.

Vacuum tube used in the mixer stage of a superheterodyne receiver.

MIXER-FIRST DETECTOR STAGE.

Mixer stage in a superheterodyne receiver.

MIXING.

Combining two or more signals, such as the outputs of several microphones, or the received signal and the local oscillator signal in a superheterodyne receiver.

MKR (MARKER).

1. Electronic range or bearing indication on a radar indicator.

2. Marker beacon.

MKS ELECTROMAGNETIC SYSTEM.

Absolute system of units, based on the meter, kilogram, and second as fundamental units extended to electrical effects by the measurement of potential difference by the power per unit current. The mechanical units of the system are based on unity as the proportionality factor in the recognized equations of mechanics, plus insertion of a new unit of force for which the name Newton has been proposed. Each of the electrical units of the mks system has the same name and the same value as the corresponding unit of the practical system of electrical units.

ML.

Designation for range loop radiators with power less than 50 watts (CAA).

ML.

ITU designation for land mobile station.

ML (STATUTE MILE).**MLCAEC (MILITARY LIAISON COMMITTEE TO THE ATOMIC ENERGY COMMISSION).****MLD (MINIMUM LINE OF DETECTION).**

AC&W term denoting the line along which detection must have taken place to permit interception to take place before the bomber reaches the MLI.

MLF (MID LINE FREQUENCY).**MLI (MINIMUM LINE OF INTERCEPTION).**

Term used in AC&W to denote the minimum line at which an enemy aircraft must be intercepted. The MLI is determined by such factors as: (1) The distance of the bomb-release line from the target obtained from a knowledge of enemy aircraft capabilities. (2) Extent of any prohibited zones around the target area. (3) Combat time of the manned interceptor aircraft.

MM (MIDDLE MARKER).

Short for next.

MM (MILLIMETER).

Metric unit of length equal to one-thousandth

of a meter, or approximately 1/25th inch.

MMF (MICRO-MICROFARAD).

One-millionth part of a microfarad; a picofarad.

MO.

ITU designation for mobile station, master oscillator.

MOAMA (MOBILE AIR MATERIEL AREA).

Air materiel area with headquarters at Mobile, Ala.

MOB. (MOBILE. MOBILIZE, MOBILIZATION).

MOBILE RADIO SERVICE.

Service between a fixed radio station and one or more mobile stations or between mobile stations.

MOBILE RECEIVER.

Radio receiver designed to be operated while in motion, as on an automobile or carried by troops.

MOBILE RELAY STATION.

Base station in which the base receiver automatically turns on the base station transmitter which retransmits all signals received by the base station receiver. Used to extend the range of mobile units and requires two frequencies for operation.

MOBILE SERVICE.

Service of radio communications between mobile and land stations, or between mobile stations.

MOBILE STATION.

Station in the mobile service intended to be used while in motion or during halts at unspecified points.

MOBILE SYSTEMS.

System consisting of a base station and mobile receivers only. Also a system consisting of a base station transmitter and base receiver with mobile transmitters and receivers. May be operated using one or two frequencies.

MOBILE TRANSMITTER.

Radio transmitter designed for installation in a vessel, vehicle, or aircraft and normally operated while in motion.

MOCK-UP.

1. Facilities for bench-testing unit components of equipment under conditions which simulate actual operation conditions.

2. Dummy equipment or equipment components built for a preliminary study of the arrangement of components.

MOD (MINISTER OF DEFENSE).

MOD (MODIFY, MODIFICATION, MODULATOR).

MODE.

1. One of several types of electromagnetic waves that may be sustained in a given resonant system. Each type of vibration is designated as a particular mode, and has its own particular electric and magnetic field configuration.

2. One of the several methods of exciting a resonant system. The term has also been used to describe the existence of a number of different input voltages which allow operation of a klystron at the same frequency. A particular wave path between the transmitter and the receiver.

MODE CHANGER.

Device for changing from one mode of propagation to another.

MODE FILTER.

Device for separating waves of different transmission modes.

MODE JUMP.

Change in mode of magnetron operation from one pulse to the next. Each mode represents a different frequency and power level.

MODE OF VIBRATION.

Mode of vibration of a vibratory body such as a piezoelectric crystal unit, is a pattern of motion of the individual particles due to stresses applied to the body, its properties, and the boundary conditions. Three common modes of vibration are flexural, extensional and shear.

MODE SHIFT.

Change in mode of magnetron operation during a pulse.

MODE SKIP.

Failure of a magnetron to fire on each successive pulse.

MODE TRANSDUCER.

Device for transforming an electromagnetic wave from one mode of propagation to another.

MODE TRANSFORMER.

(Reference: MODE CHANGER.)

MODEM.

Contraction of the two words modulator-demodulation. The modulator and demodulator circuits of a carrier terminal are normally mounted together on a single panel and may have common elements. For this reason the term modem is widely used in referring to this portion of a carrier terminal.

MODES OF PROPAGATION.

Methods of electromagnetic wave propagation in waveguides.

MODIFIED CLEAR.

Message which contains combinations of clear text and code or cipher groups.

MODIFIED CONSTANT-VOLTAGE CHARGE.

Charging of a storage battery in which the voltage of the charging circuit is held substantially constant, but a fixed resistance is inserted in the battery circuit producing a rising voltage characteristic at the battery terminals as the charge progresses.

MODIFIED EFFECTIVE POWER.

Equivalent transmitting antenna power used for lowest useful high-frequency problems for long-distance circuits. The modified effective power is equal to the transmitting antenna power (the sum of the transmitting antenna power and gain), receiving discrimination gain, and the type of service gain (with the sign reversed) when all quantities are expressed in decibels.

MODIFIED INDEX OF REFRACTION.

In the troposphere, the modified index of refraction is the index of refraction at any height increased by h/a , where h is the height above sea level and a is the mean geometrical radius of the

earth. When the index of refraction in the troposphere is horizontally stratified, propagation over a hypothetical flat earth through an atmosphere with the modified index of refraction is substantially equivalent to propagation over a curved earth through the real atmosphere.

MODING.

Defect of magnetron oscillation in which it oscillates in one or more undesired modes.

MODULATE.

To vary the amplitude, frequency, or phase of an oscillation; usually at a signal frequency rate.

MODULATED AMPLIFIER.

Amplifier stage of a transmitter in which the radio-frequency carrier is electrically varied or modulated in accordance with another signal such as voice, tone, or visual signals.

MODULATED CARRIER.

Radio-frequency carrier whose amplitude or frequency has been varied in accordance with the intelligence to be conveyed.

MODULATED CONTINUOUS WAVE.

Wave in which the carrier is modulated by a constant audio-frequency tone. In telegraphic service it is understood that the carrier is keyed.

MODULATED LIGHT.

Light that has been made to vary in intensity in accordance with the variations in an audio frequency or code signal or at a regular rate produced by a rotation or vibrating shutter.

MODULATED QUANTITY.

Combination of two or more oscillating quantities which result in the production of new frequency components not present in the original oscillating quantities.

MODULATED STAGE.

Radio-frequency stage to which the modulator is coupled and in which the continuous wave (carrier wave) is modulated in accordance with the system of modulation and the characteristics of the modulating wave.

MODULATED WAVE.

Wave, some characteristic of which varies in accordance with the value of a modulating wave.

MODULATED-BEAM PHOTOELECTRIC SYSTEM.

System in which reliable beam ranges of several thousand feet are obtained by interrupting the light beam at the source with a rotating punched or slotted disk, thus amplifying the output of the phototube.

MODULATING ELECTRODE.

Electrode to which a potential is applied to control the magnitude of the beam current.

MODULATING PHOTOELECTRIC SYSTEM.

In protective signaling, a modulated photoelectric system is a photoelectric system in which the light beam is interrupted or modulated in a predetermined manner and in which the receiving equipment is designed to accept only the modulated light.

MODULATING SIGNAL.

Wave which causes a variation of some characteristic of a carrier.

MODULATING WAVE.

Wave which causes a variation of some characteristic of a carrier.

MODULATION.

Process in which the amplitude, frequency or phase of a carrier wave is varied with time in accordance with the wave form of superimposed intelligence.

ABSORPTION. Inefficient and seldom-used method of amplitude modulation of the carrier wave of a radio transmitter. This is accomplished by coupling a microphone circuit, either directly or with vacuum-tube amplifiers, to the antenna circuit of the transmitter. This either absorbs the power radiated by, or varies the radiation resistance of the antenna with the intelligence transmitted.

AMPLITUDE. 1. Process of superimposing intelligence on a radio-frequency carrier so that the audio-frequency variations are superimposed upon the amplitude of the high-frequency wave.

2. Method of modulating a carrier wave to cause it to vary in amplitude corresponding to the amplitude of the original signal.

ANGLE. Modulation in which the angle of a sine wave carrier is the characteristic varied. Phase and frequency modulation are particular forms of angle modulation.

CATHODE. Modulation produced by application of the modulation voltage to the cathode of any electron tube in which the carrier is present.

CONSTANT-CURRENT. Amplitude modulation in which a constant-current source supplies a radio-frequency generator and a modulation amplifier in parallel, the variations in the current taken by the latter causing equal and opposite variations in the former, resulting in corresponding modulation of the carrier output.

CROSS. Intermodulation due to modulation of the carrier of the desired signal by an undesired signal wave.

DOUBLE. Modulation in which a carrier wave of one frequency is first modulated by a signal wave and is then made to modulate a second carrier wave of another frequency.

DOWNWARD. Modulation in which the instantaneous amplitude of a carrier is always less than the unmodulated carrier amplitude.

FREQUENCY. Angle modulation in which the instantaneous frequency of a sine wave carrier is caused to depart from the carrier frequency by an amount proportional to the instantaneous value of the modulating wave.

GRID. Modulation produced by the application of the modulating voltage to the control-grid of any tube in which the carrier is present.

HIGH-LEVEL. Modulation produced at a point in a system where the power level approximates that at the output of the system.

INTENSITY. Control of the brilliance of the trace on a cathode-ray screen in accordance with the magnitude of a signal.

LOW-LEVEL. Modulation produced at a point

in a system where the power level is low compared with the power level at the output of the system.

MULTIPLE. Modulation in which the modulated wave from one process becomes the modulating wave for the next.

NEGATIVE. In an amplitude modulated television system, negative modulation is that form of modulation in which an increase in brightness corresponds to a decrease in transmitted power.

OVER. More than 100-percent modulation. In amplitude modulation, over-modulation produces positive peaks of more than twice the carrier's original amplitude and brings about complete stoppage of the carrier on negative peaks, thus causing distortion.

PHASE. Angle modulation in which the angle of sine wave carrier is caused to depart from the carrier angle by an amount proportional to the instantaneous value of the modulating wave.

PLATE. Modulation produced by application of modulating voltage to the plate of any tube in which the carrier is present.

POSITIVE. In an amplitude modulated television system, positive modulation is that form of modulation in which an increase in brightness corresponds to an increase in transmitted power.

PULSE. 1. Modulation of a carrier by pulses.
2. Modulation of a pulse carrier.

PULSE AMPLIFIER. Amplitude modulation of a pulse carrier.

PULSE CODE. Modulation which involves a code. The term is commonly used to signify that form of pulse modulation in which a code is used to represent quantized values of instantaneous samples of the signal wave.

PULSE DURATION. Pulse time modulation in which the value of each instantaneous sample of the modulating wave is caused to modulate the duration of a pulse.

PULSE FREQUENCY. Modulation in which the pulse repetition frequency of the carrier is varied in accordance with the amplitude and frequency of the modulating signal.

PULSE POSITION. Pulse time modulation in which the value of each instantaneous sample of a modulating wave is caused to modulate the position in time of a pulse.

PULSE TIME. Modulation in which the value of instantaneous samples of the modulating wave are caused to modulate the time of occurrence of some characteristic of a pulse.

SCREEN-GRID. Modulation produced by application of the modulating voltage to the screen-grid of any multigrid tube in which the carrier is present.

SINGLE SIDEBAND. Modulation whereby the spectrum of the modulating wave is translated in frequency by a specified amount either with or without inversion.

TONE. Code-signal transmission obtained by causing the radio-frequency carrier amplitude to vary at fixed audio frequency.

TWO-TONE. In teletypewriter operation, a method of modulation in which two different carrier frequencies are employed for the two signaling conditions. The transition from one frequency to the other is abrupt, with resultant phase discontinuities.

VELOCITY. Modification of the velocity of an electron stream by alternately accelerating and decelerating the electrons with a period comparable with the transit time in the space concerned.

MODULATION CAPABILITY.

Of a transmitter, the maximum percentage modulation that can be obtained without exceeding a given distortion figure.

MODULATION DISTORTION.

Distortion occurring in the radio-frequency amplifier tube of a receiver when the operating

point is at the bend of the grid-voltage plate-current characteristics curve, so that greater plate-current changes are obtained on positive half-cycles than on negative half-cycles. The effect is equivalent to an increase in the percentage of modulation.

MODULATION ENVELOPE.

Curve drawn through the peaks of a graph showing the wave form of a modulated carrier represents the wave form of the intelligence carried by the signal. The modulation envelope is the intelligence wave form.

MODULATION FACTOR.

In an amplitude-modulated wave the ratio of half the difference between the maximum and minimum amplitudes to the average amplitude. This ratio is multiplied by 100 to obtain percentage modulation.

MODULATION FREQUENCY.

Number of times a second that a black line signal occurs when scanning the subject copy.

MODULATION, FREQUENCY-SHIFT.

Frequency modulation in which the modulating wave shifts the output frequency between predetermined values and the output wave is coherent with no phase discontinuity. (Reference: FREQUENCY-SHIFT KEYING.)

MODULATION INDEX.

Modulation index (for sinusoidal modulating wave) is the ratio of the frequency deviation to the frequency of the modulating wave.

MODULATION MONITOR.

Instrument used to provide a continuous indication of the modulation percentage at a transmitter.

MODULATION PERCENTAGE.

Modulation factor multiplied by 100 for expressing as a percentage.

MODULATION RISE.

Increase of the modulation percentage caused by nonlinearity of any tuned amplifier, usually the last immediate-frequency stage of a receiver.

MODULATOR.

1. Device to effect the process of modulation. In radar, a modulator is a device for generating a succession of short pulses of energy which cause a transmitter tube to oscillate during each pulse.
2. Device for mixing the carrier frequency and the signal frequency to produce sideband frequencies.

CLASS A. Class A amplifier which is used specifically for the purpose of supplying the necessary signal voltage to modulate a carrier.

CLASS B. Class B amplifier which is used specifically for the purpose of supplying the necessary signal power to modulate a carrier. In such a modulator, the class B amplifier is normally connected in push-pull.

REACTANCE-TUBE Modulator tube is made to act as a varying reactance in the oscillator circuit.

SPARK-GAP. Modulator, employed in certain radar transmitters, in which a pulse-forming line is discharged across a spark gap; the spark gap may be either a stationary or rotary type.

MODULATOR DRIVER.

Circuit in the transmitter that produces a pulse to be delivered to the control grid of the modulator stage.

MODULATOR GLOW TUBE.

Cold cathode recorder tube that is used for facsimile and sound-on-film recording. It provides a modulated high-intensity point-of-light source.

MODULATOR STAGE.

Last amplifier stage through which passes the modulating wave that modulates a radio-frequency stage.

MODUPLEX.

Special case of multiplexing an amplitude-modulated radio transmitter so teletype and facsimile can be transmitted simultaneously. Facsimile is applied through the audio system and teletype signals shift the carrier frequency. The carrier is generally shifted 425 cycles below center for

spacing and 425 cycles above center for marking. The facsimile signal is applied to the radio system in the form of an audio-frequency shift signal. A registered trademark of Press Wireless, Inc.

MOE.

ITU designation for telemetering mobile Station.

MOH.

ITU designation for hydrological and meteorological mobile station.

MOIRE.

In television, the spurious pattern in the reproduced picture resulting from interference beats between two sets of periodic structures in the image.

MOIRE PATTERN.

When scanning half-tone material made up of small dots the phototube viewing the elemental areas will sometimes see the black of a half-tone dot, sometimes half black and half white, and sometimes white. As a result the recorded copy will not have a uniform tone. There will be a variation in tone in the form of a pattern generally known as a moire pattern.

MOISTURE-REPELLENT.

So constructed or treated that moisture will not penetrate.

MOISTURE-RESISTANT.

Equipment or material so constructed or treated that it will not be injured readily by exposure to a moist atmosphere.

MOLAR CONDUCTIVITY.

Conductivity of a solution containing one gram molecular weight per 1,000 cc of solution, when placed between parallel electrodes one centimeter apart.

MOLAR RESISTIVITY.

Reciprocal of the molar conductivity.

MOLDED CAPACITOR.

Capacitor, usually mica, that has been encased in a molded plastic insulating material.

MOLECULAR PUMP.

Vacuum pump in which the molecules of the

gas to be exhausted are carried away by a rapidly revolving disk or cylinder.

MOLECULAR THEORY OF MAGNETISM.

Assumption that each molecule of matter is a separate magnet and that in ferromagnetic materials these molecules all line up with their magnetic poles pointing in the same direction when the material is magnetized.

MOLECULE.

Smallest subdivision of a compound which still retains the chemical properties of that compound. In a gas it is the smallest particle that moves about as a whole.

MOLYBDENUM.

Metallic element (chemical symbol Mo; atomic number, 42) sometimes used for grid and plate electrodes of vacuum tubes.

MOMENTUM.

Mass of a body multiplied by its linear velocity.

MONGOOSE (MID-CANADIAN LINE).

Chain of radar stations in Canada financed and built by the Canadian government along the 55th and 56th parallels.

MONITOR.

1. To check the operation and performance of a system by examining a small part or sampling of the output. A receiver or loudspeaker used for this purpose or a person assigned to this duty.
2. Device (receiver, teleprinter, oscilloscope, etc. used for checking signals.

MONITOR CONSOLE.

Console with a plan-position indicator used by supervisory personnel for observing radar and Mark X data.

MONITOR OPERATOR.

Person stationed in the control room of a radio station, who monitors a program and makes such technical adjustments as are necessary at various times.

MONITOR RECORDER.

Airman in the training and battle simulation section responsible for monitoring training operations and controlling automatic recording facilities. Term used in SAGE operations.

MONITORING.

Act of listening to, reviewing and/or recording one's own or other friendly forces communications for the purpose of maintaining standards, improving communications or for reference.

MONITORING KEY.

Key which, when operated, makes it possible for an attendant or operator to listen on a telephone circuit without appreciably impairing transmission on the circuit.

MONITORING RADIO RECEIVER.

Radio receiver arranged to permit a check to be made on the operation of a transmitting station or a transmitted signal.

MONKEY CHATTER.

Type of interference occurring in radio reception when the side frequencies of an adjacent-channel station beat with the signal of a desired station. Garbled speech or music is heard along with the desired program.

MONCHROMATIC.

Pertaining to or consisting of a single color. Radiation of a single wave length.

MONOCHROMATIC SENSITIVITY.

Response of a device to light of a given color only.

MONOCHROME CHANNEL.

In a color television system, any path which is intended to carry the monochrome signal. The monochrome channel may also carry other signals.

MONOCHROME SIGNAL.

1. In monochrome television transmission, a signal wave for controlling the luminance values in the picture but not the chromaticity values.
2. In color television transmission, that part of the signal wave which has the major control of the luminance of the color picture and which controls the luminance of the picture produced by a conventional monochrome receiver.

MONOCHROME TRANSMISSION.

In black and white television, the transmission of a signal wave which represents the brightness

values in the picture, but not the chromaticity values.

MONOCLINIC.

Crystal structure, having two of the three axes perpendicular to the third, but oblique to each other.

MONOCORD.

Type of telephone switchboard line circuit consisting of a jack, key, cord, and drop for each individual line.

MONOCORD SWITCHBOARD.

Local-battery switchboard in which each telephone line terminates in a single jack and plug.

MONOCRYSTAL.

Body of appreciable size composed of a crystalline substance and formed with one continuous crystalline structure throughout.

MONOSCOPE.

Special vacuum tube intended to produce a television signal from a fixed image for test purposes. The image is printed on the signal plate inside the tube.

MONOTRON.

(Reference: MONOSCOPE.)

MONTG (MONTGOMERY, ALABAMA).

MOON.

Satellite of a planet.

MOON MESSENGER.

Rocket fired to hit the moon.

MOON SUIT.

Inflatable, body-covering coverall developed by Navy for high altitude flights, space tests.

MOONSHINE.

Development of an airborne false target repeater, AN/APQ-8 and -16.

MOORE LAMP.

Early form of neon sign, consisting of a long gas-filled discharge tube provided with an auto-

matic arrangement for regulating the vacuum and having electrodes at opposite ends between which the glow discharge was formed.

MOPA (MASTER-OSCILLATOR POWER AMPLIFIER).

Transmitter using an oscillator followed by one or more stages of RF amplification.

MOPTARS (MULTI-OBJECT PHASE TRACKING AND RANGING SYSTEM).

Electronic system which is capable of making trajectory measurements of three to five different objects simultaneously.

MORSE CODE.

System of dot and dash signals invented by Samuel F. B. Morse, now used chiefly in wire telegraphy.

MORSE SOUNDER.

Telegraph receiving instrument that produces an audible sound at the beginning and end of each dot and dash, from these sounds a trained operator can read the message.

MORSE TELEGRAPHY.

Method of telegraph operation in which the signals are formed in accordance either with the American or with the Continental Morse Code.

MORT (MORTAR).

MOSAIC.

1. Light-sensitive surface of an iconoscope or other television camera tube. In one form it consists of millions of tiny silver globules on a sheet of ruby mica, with each globule treated with caesium vapor to make it sensitive to light.
2. Assembly of aerial photos with edges matched to form a continuous photographic presentation of a portion of the earth's surface; sometimes called aerial mosaic.

MOSAIC STRUCTURE.

Subdivision of a crystal into polyhedral blocks of microscopic dimensions, with discontinuities in the lattice structure between them.

MOSAIC TELEGRAPHY.

Method of telegraph operation in which the patterns forming the characters are made up from

units transmitted as individual signal elements.

MOT (MOTOR).

MOTHER CRYSTAL.

Quartz crystal as found in nature. It originally has a characteristic geometric design with flat faces always at definite angles to each other, but generally all or some of the faces are worn because of abrasion with stones or other objects.

MOTHER QUARTZ.

(Reference: MOTHER CRYSTAL.)

MOTION-PICTURE PICK-UP.

Television camera used to pick up scenes directly from motion-picture film.

MOTIONAL IMPEDANCE.

Vector difference, in an electroacoustic transducer, between the normal impedance and the blocked impedance.

MOTOR.

Machine that converts electric energy into mechanical energy.

MOTOR CONVERTER.

Converter in which an induction motor with an ac supply connected is combined with a synchronous converter that is connected to a dc circuit. The armature of the induction motor is connected directly to that of the synchronous converter.

MOTOR REDUCTION UNIT.

Motor with an integral mechanical means of obtaining a speed differing from the speed of the motor.

MOTOR REEL UNIT.

Motor-driven drum, mounted on a motor vehicle, for use in winding or laying field wire.

MOTOR TUNING, ADJUSTABLE.

Mechanical or electrical arrangement whereby the motor tuning may be confined to a portion of the total frequency range to which the receiver may be tuned.

MOTOR TYPE WATT-HOUR METER.

Meter that consists essentially of a motor element in conjunction with a braking element in which the resultant speed is proportional to the power and a register connected thereto by suitable gearing so as to count in terms of equivalent kilowatt hours the revolutions of the rotating element.

MOTOR-CIRCUIT SWITCH.

Switch intended for use in a motor branch circuit. It is rated in horsepower and is capable of interrupting the maximum operating overload current of a motor of the same rating at the rated voltage.

MOTOR-FIELD CONTROL.

Method of controlling the speed of a motor by means of a change in the magnitude of the field current.

MOTOR-GENERATOR SET.

Machine which consists of one or more motors mechanically coupled to one or more generators.

MOTORBOATING.

1. Self-oscillation, usually of a pulse type, in an amplifier at a sub-audio frequency.
2. Loudspeaker sounds similar to those produced by a motorboat. Caused by signal impulses in one part of an audio frequency amplifier feeding back to a prior part at a slow rate.

MOUNTAIN STANDARD TIME.

Mean time based on the 105th meridian, west longitude.

MOUNTING.

Fixed support.

MOUNTING AREA.

General locality where assigned forces of an amphibious or airborne operation, with their equipment, are assembled, prepared, and loaded in shipping and/or aircraft preparatory to an assault.

MOUTH OF A HORN.

End with the larger cross-sectional area.

MOVE TRACK.

Manual action by which a track in lost status is

moved not over 20 miles to a new position. The new position must not contain data.

MOVING COIL GALVANOMETER.

One in which suspended or pivoted coil is the moving element.

MOVING COIL LOUDSPEAKER.

Moving-conductor loudspeaker in which the moving conductor is in the form of a coil conductively connected to the source of electrical energy.

MOVING COIL MICROPHONE.

Moving-conductor microphone in which the movable conductor is in the form of a coil.

MOVING COIL SPEAKER.

Moving-conductor speaker where the conductor is in the form of a coil conductively connected to the source of electrical energy.

MOVING ELEMENT OF AN INSTRUMENT.

Comprises those parts which move as a direct result of a variation in the electrical quantity which the instrument is measuring.

MOVING TARGET INDICATOR.

Device which limits display of radar information primarily to moving targets (Reference: AFM 100-50.)

MOVING-CONDUCTOR LOUDSPEAKER.

Magnetic loudspeaker in which acoustic waves are produced by mechanical forces resulting from magnetic reactions between the field of the moving conductor and the steady applied field.

MOVING-CONDUCTOR MICROPHONE.

Microphone in which the electric output results from the motion of a conductor in a magnetic field.

MOVING-IRON INSTRUMENT.

Instrument which depends for its operation on the reactions resulting from the current in one or more fixed coils acting upon one or more pieces of soft iron or magnetically similar materials in the moving system.

MP (MOISTURE PROOF).

MPH (MILES PER HOUR).

MR (MEDIUM RANGE).

Classification of ground radar sets by slant range. Applied to equipment with a maximum range exceeding 75 miles but less than 150 miles

MR (MONITOR RECORDER).

Airman in the training and battle simulation section responsible for monitoring training operations and controlling automatic recording facilities. Term used in SAGE operations.

MRA.

Designation for range (adcock vertical radiators), power 50 watts or more, but less than 150 watts.

MRC (MILITARY REPRESENTATIVES COMMITTEE).**MRU (MEDIUM-POWERED RANGE ADCOCK ANTENNA).**

Designation for range (loop radiators), power 50 watts or more, but less than 150 watts.

MS.

ITU designation for ship station.

MS (MILLISECOND).**MSA (MUTUAL SECURITY ACT, AGENCY).****MSG (MAPPING SUPERVISOR GAP FILLER).**

In air defense, a noncommissioned office responsible to the air surveillance officer for gap-filler mapping.

MSGC (MESSAGE).

Thought or idea expressed briefly in plain or secret language, prepared in a form suitable for transmission by any means of communication.

MGS CEN (MESSAGE CENTER).

Agency charged with the responsibility for acceptance, preparation for transmission, receipt and delivery of messages.

MSL (MEAN SEA LEVEL).

Level of the sea midway between mean low water and mean high water.

MSL (MAPPING SUPERVISOR LONG RANGE).

Noncommissioned officer responsible to the air

surveillance office for long range mapping.

ML (MISSILE).

Rocket used as a weapon.

MSGR (MESSENGER).

(Reference: SUSPENSION STRAND).

MSN (MISSION).

1. In communications usage, particularly in cases of radio monitor stations, telegraph and tape relay stations and network stations, it is an assigned task or duty pertaining to time schedules, station contacts, frequency coverage, responsibility and logging procedures.

2. In common usage, especially when applied to lower military units, a duty or task assigned to an individual or unit.

MST (MARITIME STANDARD TIME).**MSTS (MILITARY SEA TRANSPORTATION SERVICE).**

Service within the Department of Defense but under the operational control of the Navy, responsible for providing sea transportation for personnel and cargo of the Department of Defense (excluding that transported by units of the fleet) and as authorized or directed for other government agencies of the United States subject to policies and priorities issued by the Joint Chiefs of Staff.

MT (MOTOR TRANSPORT).**MTI (MOVING TARGET INDICATOR).**

Device which limits the display of radar information primarily to moving targets. Basically, it measures the time of travel to and from the target of successive radar pulses. If the target is stationary, or nearly so, the travel time will be approximately the same for successive pulses and the device will cancel the signal, thus preventing it from appearing as a target. If the target is moving toward or away from the radar, the travel time for successive pulses will be different, and the signal will not be cancelled by the moving target indicator. This allows the signal to appear as a target on the display equipment. Be-

cause of the minute difference in travel time of successive pulse reflected from even a rapidly moving target, it is necessary to use the phase comparison method to detect it. No direct time measurement technique would be sufficiently accurate.

**MTUOP (MOBILE TRAINING UNIT
INOPERATIVE FOR PARTS REQUISITION).**

MTR (MULTIPLE TRACK RANGE).

Adoption of the GEE system utilizing two closely-spaced, synchronized pulse stations. The indicator in the aircraft has several predetermined wheels, skids, or tracks, and moved by means of a motor.

MTZ (MOTORIZED).

1. Of a piece of equipment: Provided with time difference settings, so that by their selection, a number of approximately parallel tracks may be flown.

2. Of units: Provided with motor vehicles.

MU FACTOR.

Ratio of the change in one electrode voltage to the change in another electrode voltage under the conditions that a specified current remains unchanged and that all other electrode voltages are maintained constant. It is a measure of the relative effect of the voltages on two electrodes upon the current in the circuit of any specified electrode.

MUCH SAW.

Fixed-blade type of saw which runs in a bath or stream of carborundum abrasive.

MUF (MAXIMUM USABLE FREQUENCY).

Upper limit of the frequencies that can be used at a specified time for radio transmission between two points and involving propagation by reflection of the regular ionized layers of the ionosphere.

Note. Higher frequencies may be transmitted by sporadic and scattered reflections.

MULLER TUBE.

Thermionic vacuum tube having an auxiliary cathode or grid connected to the main cathode internally through a high-value resistor.

MULTI FREQUENCY TRANSMITTER.

Transmitter capable of operating on two or more selectable frequencies, one at a time, using pre-set adjustments of a single radio-frequency portion.

MULTI POINT CIRCUIT.

Circuit which is shared by two or more tributary stations.

MULTI STAGE ROCKET.

Series of rocket engines which fire in sequence, each on the burnout of the preceding one.

MULTI UNIT TUBE.

Electron tube containing within one glass or metal envelope, two or more groups of electrodes, each associated with separate electron streams.

MULTICELLULAR HORN.

Cluster of horns having a common throat and separate mouths which lie in a common surface and are contiguous. The purpose of the cluster is to provide control of the directional pattern of the radiated energy.

MULTICHANNEL TRANSMITTER.

Radio transmitter having two or more complete radio-frequency portions capable of operating on different frequencies either individually or simultaneously.

MULTIELECTRODE TUBE.

Vacuum tube containing more than three electrodes associated with a single electron stream.

MULTIELEMENT PARASITIC ARRAY.

Array of dipoles and parasitic reflectors, arranged so as to produce a radar beam of desired directivity.

MULTIGUN TUBE.

Cathode-ray tubes having more than one electron gun, such as those used in color television receivers and multiple presentation oscilloscopes.

MULTIHOP PROPAGATION.

Process by which radio waves reach a distant receiving point by making two or more reflections from the ionosphere.

MULTIOFFICE EXCHANGE.

Exchange served by more than one local central office.

MULTIPATH CANCELLATION.

Occurrence of effectively complete cancellation of the signals because of the relative amplitude and phase differences of the components arriving over the separate paths.

MULTIPATH EFFECT.

Condition in which radio waves arrive at a receiving point at slightly different times because they travel over paths that appreciably differ in length.

MULTIPATH TRANSMISSION.

Propagation phenomenon which results in signals reaching the radio receiving antenna by two or more paths, usually having both amplitude and phase differences. May cause jitter in facsimile.

Note. In European practice this is called echo.

MULTIPLE.

1. Group of terminals arranged to make a circuit or group of circuits accessible at a number of points at any one of which connection is made.
2. To connect in parallel.
3. To render a circuit accessible at a number of points at any one of which connection can be made.

MULTIPLE ADDRESS MESSAGE.

Message which is destined for two or more addressees each of whom is informed of all the addresses. Each addressee must be indicated as action or information.

MULTIPLE APPEARANCE.

Jack arrangement in switchboards whereby a single line circuit appears before two or more operators.

MULTIPLE CALL INDICATOR.

Last entry on line two of a multiple call message which indicates the total number of routing indicators in that line.

MULTIPLE CONNECTIONS.

Connecting of two or more devices in parallel.

MULTIPLE, GRADED.

(Reference: CROSS-CONNECTIONS, GRADED.)

MULTIPLE ECHO.

Succession of separately distinguishable echoes from a single source.

MULTIPLE MODULATION.

Succession of processes of modulation in which the modulated wave from one process becomes the modulating wave for the next.

Note. In designating multiple-modulation systems by their letter symbols, the processes are listed in the order in which the signal intelligency encounters them. Example: PPM-AM means a system in which one or more signals are used to position-modulate their respective pulse subcarriers which are spaced in time and are used to amplitude-modulate a carrier.

MULTIPLE REFLECTION ECHOES.

Echoes returned from a real target by way of reflection from some object in the radar beam. Such echoes appear at a false bearing and false range.

MULTIPLE SWITCHBOARD.

Manual telephone switchboard in which each subscriber line is attached to two or more jacks, so as to be within reach of several operators.

MULTIPLE TARGET DECEPTION.

Classified definition. (Reference: AFM 100-50.)

MULTIPLE X-Y RECORDER.

Recorder that plots a number of independent charts simultaneously, each showing the relation of two variables, neither of which is time.

MULTIPLE-ADDRESS CODE.

(Reference: INSTRUCTION CODE.)

MULTIPLE-CONTACT SWITCH.

Switch in which the movable contact can be moved over a number of different fixed contacts.

MULTIPLE-PURPOSE TESTER.

Single test instrument having a number of different ranges for measuring voltage, current, and resistance.

MULTIPLE-TUNED ANTENNA.

Antenna with connections to ground or counterpoise through tuning reactances at more than one point.

MULTIPLE-TWIN QUAD.

Quad in which the four conductors are arranged in two twisted pairs, and the two pairs twisted together.

MULTIPLE-UNIT STEERABLE ANTENNA.

Multiple-unit receiving antenna system in which the vertical angle of maximum response can be adjusted to obtain optimum selectivity and to reduce interference.

MULTIPLE-UNIT TUBE.

Vacuum tube containing within one envelope two or more groups of electrodes associated with independent electron streams.

MULTIPLEX.

Denotes the simultaneous use of a number of channels on a single circuit.

MULTIPLEX CODE TRANSMISSION.

Simultaneous transmission of two or more code messages in either or both directions over the same transmission path.

MULTIPLEX PRINTING TELEGRAPHY.

Printing telegraphy in which the line circuit is employed to transmit in turn one character (or one or more pulses of a character) for each of two or more independent channels.

MULTIPLEX RADIO TRANSMISSION.

Simultaneous transmission of two or more signals using a common carrier wave.

MULTIPLEX TELEGRAPHY.

Telegraphy employing multiplex code transmission.

MULTIPLEX TRANSMISSION.

Simultaneous transmission of two or more signals by means of a common carrier wave. Multiplex transmission as applied to high-frequency broadcast stations means the transmission of facsimile or other aural signals in addition to the regular broadcast signals.

MULTIPLEXING.

Transmitting several simultaneous messages on the same circuit.

FREQUENCY DIVISION. Transmitting two or more signals over a common path by using a different frequency band for each signal.

TIME DIVISION. Transmitting two or more signals over a common path by using different time intervals for different signals.

MULTIPLIER.

1. Resistance used in series with a voltmeter to permit measurements of higher voltages than are indicated on the meter scale.

2. Device which has two or more inputs and whose output is a representation of the product of the quantities represented by the input signals.

MULTIPLIER PHOTOTUBE.

Vacuum-type phototube that employs secondary emission to amplify the electron stream emitted from the illuminated photocathode.

MULTIPLIER TUBE.

Vacuum tube utilizing secondary emission from a number of electrodes in sequence to obtain increased output current. The electron stream is reflected in turn from one electrode of the multiplier to the next.

MULTIPLYING FACTOR.

Number by which the reading of a given meter must be multiplied to obtain the true value.

MULTIPOLAR.

Having more than one pair of magnetic poles.

MULTIPOSITION SWITCHBOARD.

Telephone switchboard of two or more positions served by more than one operator.

MULTIRATE METER.

Meter which registers at different rates or on different dials at different hours of the day.

MULTISPEED MOTOR.

Motor which can be operated at any one of two or more definite speeds, each being practically independent of the load.

MULTISPOT NOISE JAMMING.

Classified definition. (Reference: AFM 100-50.)

MULTIVIBRATOR.

Form of relaxation oscillator which comprises two stages so coupled that the input of each one is derived from the output of the other. A multivibrator is termed free-running or driven, according to whether its frequency is determined by its own circuit constants or by an external synchronizing voltage.

MULTIVOLTAGE CONTROL.

Armature-voltage control obtained by impressing successively, on the armature of the motor, a number of substantially fixed voltages such as may be obtained from multicommutator generators common to a group of motors.

MUMETAL.

Magnetic alloy having high permeability and low hysteresis.

MUNICIPAL FIRE ALARM SYSTEM.

Manual fire alarm system in which the stations are accessibly located for operation by the public, and the signals of which register at a central station maintained and operated by the municipality.

MUNICIPAL POLICE REPORT SYSTEM.

System of strategically located stations from any one of which a patrolling policeman may report his presence to a supervisor in a central office maintained and operated by the municipality.

MUNICIPAL POLICE STATION.

Station used by a municipal or county police department for emergency radiotelephone service with mobile police units.

MURRAY LOOP TEST.

Method of localizing a fault in a cable by replacing two arms of a Wheatstone bridge with a loop formed by the cable under test and a cable connected to the far end of a defective cable.

MUSA ANTENNA.

Multiple-unit steerable antenna consisting of a number of stationary antennas, the composite major lobe of which is electrically steerable.

MUSH WINDING.

Winding in ac machines; the conductors are placed one by one in prepared slots and the end connections are separately insulated. (Reference: RANDOM WINDING.)

MUTING.

Silencing, or reducing in volume.

MUTING CIRCUIT.

1. Circuit which cuts off the output of a receiver when no RF carrier greater than a predetermined intensity is reaching the first detector.

2. Circuit for making a receiver insensitive during operation of its associated transmitter.

MUTING SWITCH.

Switch used in connection with automatic tuning systems to silence the receiver while tuning from one station to another.

MUTUAL CONDUCTANCE.

Amplification factor of a vacuum tube divided by the alternating-current plate resistance. More generally, it is the inphase component of the alternating current of one electrode divided by the alternating voltage of another electrode, all other electrode voltages being maintained constant. The control grid-plate trans-conductance is ordinarily the most important. Its symbol is GM and it is expressed in mhos or micromhos. (Reference: TRANSCONDUCTANCE.)

MUTUAL IMPEDANCE.

Between any two pairs of terminals of a network, the ratio of the open-circuits potential difference between either pair of terminals to the current applied at the other pair of terminals, all other terminals being open. Mutual impedance may have either of two signs depending upon the assumed directions of input current and output voltage; the negative of the above ratio is usually used. As ordinarily used, mutual impedance is additive if two coils of a transformer are connected in series or in parallel aiding, and is subtracted if two coils of a transformer are in series or in parallel opposing. (Reference: TRANSFER IMPEDANCE.)

MUTUAL INDUCTANCE.

Common property of two associated electric circuits which determines, for a given rate of change of current in one of the circuits, the electromotive force induced in the other. The property exists when the relative position of two conductors causes the magnetic lines of force from one to link with the turns of the other.

MUTUAL INDUCTION.

Inducing of a voltage in one circuit by a varying current in a neighboring circuit when there is inductive coupling between the two circuits.

MUTUAL INDUCTOR.

Inductor used to change the mutual inductance between two circuits.

MUTUAL SUPPORT.

That support which units, because of their assigned tasks, their position relative to each other and to the enemy, and their inherent capabilities, render to each other against an enemy.

MUTUAL-INDUCTIVE COUPLING.

Coupling of two circuits by means of their mutual inductance.

MUX.

Contraction of the word multiplex. MUX refers independent channels, voice or teletype, into a

to equipment or technique of combining multiple complex signal which in turn is transmitted to a companion terminal and restored to individual channels. The AN/FCC-5 is typical MUX equipment. (Reference: MULTIPLEX, MULTIPLEXING.)

MV (MICROVOLT).

One-millionth of a volt.

mv (MILLIVOLT).

Unit of voltage equal to one-thousandth of a volt.

MVC (MANUAL VOLUME CONTROL).

mw (MILLIWATT).

Unit of power equal to one-thousandth of a watt.

MWO (MODIFICATION WORK ORDER).

MYCALEX.

Mica bonded with glass. It has a low power factor at high frequencies and is a good insulator at all frequencies.

MYMSG.

Reference my message.

MYSTERY CONTROL.

Miniature radio transmitter that produces radio waves used to control equipment through space without wires.

N

N (NORTH).

True north.

N/S RATIO.

Ratio normally expressed in db of interference to signal carrier powers in the pass band of the particular receiver under test. This term is of particular interest in receiver performance studies.

N-ARY CODE.

Code in which each code element may be any one of N distinct kinds or values.

N-INDICATOR.

Modified type A scan with two traces horizontally displaced to permit pip matching in a lobe-switching system, with a range step in each trace to permit direct measurement of range. A combination of types K and M scans.

N-TYPE CRYSTAL RECTIFIER.

Crystal rectifier in which forward current flows when the semi-conductor is negative with respect to the metal.

NA (NAVAL AIR).

Term for such locations as naval air force, naval aircraft.

NAAS (NAVAL AUXILIARY AIR STATION).**NAB (NAVAL AIR BASE).****NABD (NAVAL ADVANCE BASE DEPOT).****NAC (NORTH ATLANTIC COUNCIL).**

Supreme administrative authority of NATO, composed of representatives of member governments.

NACA (NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS).

Government committee created by an act of Congress, approved 3 March 1915, to direct and supervise study of the problems of flight and to direct and conduct aeronautical research and experiment.

NAD (NAVAL AMMUNITION DEPOT).**NADEFCOL (NATO DEFENSE COLLEGE).**

College in the Ecole Military, Paris, founded under the sponsorship of General D. D. Eisenhower, SHAPE Commander, in November 1951 for training both military and civilian personnel for service in the defense of NATO countries.

NADPB (NORTH ATLANTIC DEFENSE PRODUCTION BOARD).**NAF (NAVAL AIR FACILITY).****NAIOP (NAVIGATIONAL AIR INOPERATIVE FOR PARTS REQUISITION).****NAIOP REQUISITION (NAVIGATIONAL AID INOPERATIVE FOR PARTS REQUISITION).**

Requisition submitted for parts, components, or replacement equipment required to return an inoperative airways and air communications service (AACS), navigational aid, or communications facility to fully operational status. Such requisitions will be identified with the abbreviation NAIOP as a prefix to the requisition number.

CENTER).**NAMISTESTCEN (NAVAL AIR MISSILE TEST NAMTC (NAVAL AIR MISSILE TEST CENTER).****NAND (NAVAL AMMUNITION AND NET DEPOT).****NAOTS (NAVAL AVIATION ORDNANCE TEST STATION).****NAPERIAN LOGARITHM.**

Logarithm whose base is equal to 2.718.

NARCOM (NORTH ATLANTIC RELAY COMMUNICATIONS).**NARROW-BAND AMPLIFIERS.**

Amplifiers designed for optimum operation over a narrow band of frequencies.

NAS (NAVAL AIR STATION).

Naval establishment comprising facilities for the operation, maintenance, and supply of either heavier-than-air or lighter-than-air aircraft and including any associated facilities or installations, corresponding to an air base in the Air Force.

NASD (NAVAL AIR SUPPLY DEPOT).

NAT (NORTH ATLANTIC TREATY).
(Reference: NATO.)

NAT (NORTH ATLANTIC REGION).

NATB (NAVAL TRAINING BASE).

NATIONAL ELECTRIC CODE.

Regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters for safety purposes.

NATIONAL SECURITY AGENCY.

Organization which directs all military communications security and intelligence operations. Prior to 4 November 1952, it was known as the Armed Forces Security Agency.

NATIONAL STRATEGY.

Art and science of developing and using the political, economic, and psychological powers of a nation, together with its armed forces, during peace and during war, to secure national objectives

NATIONAL TELEVISION SYSTEM COMMITTEE.

Committee organized in 1940 and comprised of all United States companies and organizations interested in television. It formulated a set of television standards that were approved by the Federal Communications Commission.

NATIONWIDE TOLL DIALING.

System of automatic switching whereby an outward toll operator can complete calls to any basic numbering plan area in the country covered by the system.

NATIS (NORTH ATLANTIC TREATY INFORMATION SERVICE).

NATL (NATIONAL).

1. Of or pertaining to a nation.
2. Devoted to one's country's interests; member of a nation

NATO (NORTH ATLANTIC TREATY ORGANIZATION).

Organization of several nations in a treaty alliance for collective defense and the preservation of peace and security against aggression. Organized in 1949.

NATURAL FACE FIXTURE.

In crystals, a name applied to the X-ray device by which the direction of the natural face is determined on Z sections, etc. The device is usually mounted on the left side of the X-ray tube. (Reference: LEFT-HANDED FIXTURE.)

NATURAL FREQUENCY.

1. In any system, the frequency at which its vibrating element will vibrate after the external force displacing it from its normal position has ceased to act. The unit is the cycle per second.
2. Lowest resonant frequency of an antenna, or other device or circuit, without added inductance or capacitance.

NATURAL FREQUENCY OF AN ANTENNA.

Its lowest resonant frequency without added inductance or capacitance.

NATURAL PERIOD.

Period of the free oscillation of a body or system. When the period varies with amplitude, the natural period is the period when the amplitude approaches zero.

NATURAL RADIOACTIVE MATERIALS.

Substances occurring in a natural state which exhibit the property of radioactivity.

NATURAL RESONANCE.

Resonance in which the period of frequency of the applied agency maintaining oscillation is the same as the natural period of oscillation of a system. (Reference: PERIODIC RESONANCE.)

NATURAL WAVELENGTH.

Wavelength corresponding to the natural frequency of an antenna or circuit.

NAUTICAL MILE.

Unit of distance which is equal to one minute of arc of a great circle of a sphere having an area equal to that of the earth. The standard length in the United States is 6080.20 feet, or 1.15155 statute miles.

NAV (NAVY, NAVIGATE).**NAVACT.**

General message originated by the Secretary of the Navy, similar to ALNAV in content except the Marine Corps is excluded.

NAVAGLIDE.

Instrument low approach system which uses a single frequency for both the localizer and glide path transmissions instead of the two usually employed. The system also includes a distance indicating feature. Use of only one frequency for the two beams is made possible by time sharing techniques.

NAVAHO.

Strategic intercontinental guided missile developed for the Air Force. It receives an initial acceleration from a rocket motor and then cruises at high altitude and supersonic speeds using ram-jet engines. It will use an inertial celestial guidance system and is designed for nuclear war heads. The nomenclature is SM-64. Terminal Guidance will be inertial. A later model The Navaho II, is designated XB-64.

NAVAID (NAVIGATION AID).**NAVAL.**

Type of miniature receiving tube having nine pins.

NAVAR.

Radar system for airport traffic control and airway navigation. It projects an electronic moving picture on a chart in the airport control center, showing the location of aircraft within a specified area around the airport.

NAVARHO.

Long range rho-theta, radio navigational system which operates in the low-frequency band between 90 and 110 KCS. This system will provide both azimuth and distance information from a single transmitter site. It has a range of approximately 2000 miles, and should be accurate to about one degree in azimuth and one percent in distance. It consists essentially of NAVIGLOBE system, which gives omni-directional bearing information, plus a distance meas-

uring feature. Bearing information is obtained by amplitude comparison of successive and overlapping field patterns at a given point. Distance is measured by the phase comparison technique. This requires a frequency standard or oscillator for both air and ground units which is stable to one part in a billion for a minimum of eight hours. The ground equipment, designated the AN/FPN-10, consists of a single oscillator feeding three transmitters, each working into a vertical antenna. The antennas are situated at the corners of an equilateral triangle and are spaced about 0.4 wavelengths apart. The antennas are pulse excited in alternate pairs, once each second, by RF power of equal strength and phase. This produces three identical and overlapping figure-eight field patterns rotated 120 degrees from each other. Bearing information is derived, or translated, by comparing the relative strengths of the successive field patterns at a given point. In addition, a fourth or synchronizing pulse is transmitted omni-directionally from all three antennas each second. This pulse enables the receiving equipment to isolate and identify the other three pulses and also is used to obtain distance information. These four pulses constitute a complete cycle. Each is 170 milliseconds long and the spacing between each is 80 milliseconds. The synchronizing pulse consists of two signals differing in frequency by exactly 100 CPS. These two signals are used to produce a 100-cycle signal obtained from the stable oscillator. If these two signals are in phase at a given point and the receiving equipment is then moved, the signals will be out of phase by an amount directly proportional to the distance moved. This distance traveled can be determined by measuring the phase shift. The NAVARHO system has an inherent ambiguity of 180 degrees in azimuth and 1620 nautical miles in distance. This is the wavelength of a 100-cycle wave. Because of the slow pulse repetition rate, the system operates on an extremely narrow bandwidth. The airborne equipment is designated AN/ARN-27. Automatic display of bearing and distance information on conventional indicators can be provided in the aircraft. These can be equipped to warn against

unreliable indications caused by improper operation or poor signals. Another check which may be used to periodically transmit a special signal pattern which will give a predetermined bearing on all properly operating receivers, regardless of location. Noise effects are minimized by use of square-law detection, extremely narrow bandwidth, and signal amplitude limiting in the initial wider-band stages of the receiver. The mode of operation of the bearing translator can be changed during severe noise conditions, so that it will examine a larger number of cycles before giving a reading, thus tending to average out disturbances which seriously affect accuracy over a small number of cycles. In case the synchronizing signal is lost, a tuning fork oscillator can maintain adequate synchronization with the transmitter cycle until the signal is again received. During periods of intense noise, standby transmitters can be operated in parallel with the regular transmitters to increase radiated power. Under current U. S. policy NAVARHO is considered the aid which offers greatest promise for international standardization in ICAO. Present plans call for presentation to ICAO for standardization in 1960.

**NAVARMDP (SUPERINTENDENT-IN-CHARGE
NAVAL ARMAMENT AND/OR AMMUNITION
DEPOT).**

NAVASCREEN.

System for displaying computing traffic-control data. The principle feature of this system is a large display screen upon which all information necessary for the control of aircraft in the area is projected by optical means. This information is obtained by operators from radar presentation and other sources and put into the proper form for display.

**NAVCOM (NAVIGATION COUNTERMEASURES
AND DECEPTION).**

All electronics countermeasures against navigational aids.

**NAVCOMSTA (NAVAL COMMUNICATIONS
STATION).**

NAVFE (NAVAL FORCES FAR EAST).

**NAVFLAGOCENEUR (NAVAL FLAG OFFICER
CENTRAL EUROPE).**

NAVIGATION.

Process of directing an aircraft, ship, etc., so as to reach the intended destination, through the use of calculations as to position, direction, etc.

RADAR. Use of radar to assist in navigation and pilotage.

RADIO. Navigation intended for the determination of position or direction or for obstruction warning in navigation.

NAVIGATIONAL RADAR.

Radar equipment used to assist in navigation and pilotage.

NAVIGLOBE.

Long range radio navigational system developed for the Air Force which operates in the low frequency band between 90-110 KC. It provides omni-directional bearing information from a single transmitter site, and uses an extremely narrow band-width (about 20 cycles). Bearing information is obtained by amplitude comparison of three successive radio waves transmitted from a single station. With the addition of distance measuring equipment of the phase comparison type, the NAVIGLOBE system becomes the NAVARHO system. This is a rho-theta system which should give range and azimuth information accurate to one degree in azimuth and one percent in distance at ranges up to about 2000 miles. The NAVIGLOBE ground installation consists of three antennas situated at the corners of an equilateral triangle, and spaced about 0.4 wavelengths apart. The antennas are pulse excited in alternate pairs once each second by RF power of equal current and phase. This produces three identical and overlapping figure-eight field patterns rotated 120 degrees from each other, once each second. Each pair of antennas is excited for 170 milliseconds. A similar synchronizing pulse at a slightly different frequency is also radiated once each second from a single antenna giving omni-directional coverage. This signal marks the start of the transmission cycle and enables the receiver to isolate and identify the signals

from the three separate pairs of antennas. Bearing information is derived or translated by comparing the relative strengths of the successive field patterns at a given point. Automatic display of bearing information on conventional type indicators can be provided in the aircraft. The NAVIGLOBE system has an inherent azimuth ambiguity of 180 degrees. Noise effects are minimized by use of square-law detection, narrow bandwidth operation, and signal amplitude limiting in the initial wider-band stages of the receiver. Under severe noise conditions, the bearing translator is switched to a mode of operation wherein it examines a large number of cycles before giving a reading, thus tending to average out disturbances which would seriously affect the accuracy over a small number of cycles. In case noise is severe enough to obliterate the synchronizing signal, although useful information remains in the other pulses, a tuning fork oscillator in the receiver maintains adequate synchronization with the transmitter cycles until the signal is again received. When signals are so bad as to contain no trustworthy bearing information, an automatic warning is given. Another check or safeguard which may be used is to periodically transmit a special pattern which will give predetermined bearing on all receivers, regardless of location. If this bearing is observed it can be assumed that the airborne equipment is properly operative and calibrated. The nomenclature for the airborne NAVIGLOBE set is AN/ARN-27. The ground equipment is designated AN/FPN-10, and consists essentially of a single oscillator feeding three transmitters, each of which feeds an antenna. During periods of intense noise, standby transmitters can be operated in parallel with the regular transmitters in order to increase radiated power.

NAVOP.

General message originated by the Chief of Naval Operations, similar to ALNAV in content except attaches, missions, observers, and minor shore activities are excluded.

NAVPACK.

External store for airways navigation equipment under development for the Bureau of Aeronau-

tics. In an effort to eliminate the weight of Civil Airways Navigational Aids from carrier-based aircraft, a compact, rocket-shaped compartment designed to contain all equipments necessary for instrument flight on the Civil Airways is being designed for external attachment. All components of the equipments including the antennas, but excepting controls and indicators, will be integral to the store. Controls and indicators for the equipments will not be permanently installed in the cockpit and arrangements will be made for their easy removal and reinstallation. The only permanently installed weight is to be the power and control wiring between the cockpit and wing. It is estimated that this permanently installed weight will be in the order of five pounds for most carrier aircraft.

NAVRESEARCH (NAVAL RESEARCH ESTABLISHMENT, DARMOUTH, N.H.).

NAVSHIPYD (NAVAL SHIPYARD).

NAWAF (NAVY WITH AIR FORCE).

NBFM (NARROW BAND FREQUENCY MODULATION).

NCS (NET CONTROL STATION).

Station within a communication network, which enforces circuit discipline in that network.

ND (NAVY DEPARTMENT).

NDB (NON-DIRECTIONAL RADIO BEACON).

NDRC (NATIONAL DEFENSE RESEARCH COMMITTEE).

NEAC (NORTHEAST AIR COMMAND).

NEAR-END CROSS TALK.

Cross talk which is propagated in a disturbed channel in the direction opposite to the direction of propagation of the current in the disturbing channel. The terminal of the disturbed channel at which the near-end cross talk is present is ordinarily near or coincides with the energized terminal of the disturbing channel. In the most simple case, if signals are sent into pair 1 at terminal A, the cross talk measured in pair 2 at terminal A is called near-end cross talk.

NEC (NATIONAL ELECTRONICS CODE).

NEEDLE GAP.

Spark gap in which the electrodes are needle points.

NEEDLE TALK.

Sounds directly produced by vibration set up in a phonograph needle and associated parts of a phonograph pickup.

NEEDLE, TEST POINT.

Sharp steel probes connected to test cords for making contacts with conductors.

NEG (NEGATIVE).

1. Terminal or electrode having more electrons than normal. Electrons flow out of the negative terminal of a voltage source.
2. Designation used to describe an opposite character to positive, as in negative resistance, negative transmission, negative feedback, etc.

NEGATIVE BIAS.

Grid bias voltage that makes the control grid of a vacuum tube negative with regard to its cathode.

NEGATIVE BOOSTER.

Booster used in connection with a ground-return system for the purpose of reducing the difference of potential between two points to the grounded return. It is connected in series with a supplementary insulated feeder extending from the negative bus of the generating station or substation to a distant point on the grounded return.

NEGATIVE CHARGE.

Type of charge in which the object in question has more than its normal number of electrons. A condition in a circuit when the element in question retains more than its normal quantity of electrons.

NEGATIVE CONDUCTOR.

Conductor connected to the negative terminal of a source of supply.

Note. A negative conductor is frequently used as an auxiliary return circuit in a system of electric traction.

NEGATIVE ELECTRICITY.

A body is said to possess negative electricity when it contains or possesses an excess of electrons. An example is the electricity that predominates in a resinous body after it has undergone electrification by rubbing with wool.

NEGATIVE ELECTRODE.

Body of conducting material that serves as the anode in a primary cell when the cell is discharging. It is connected to the negative electrode, to the negative terminal, then out through the external circuit.

NEGATIVE FEEDBACK.

1. Electron-tube circuit in which a signal, fed back from the plate to the grid circuit, is 180 degrees out of phase with the input signal, resulting in a decrease in amplification, but a reduction in distortion.
2. Feedback from a high level point to a low level point of an amplifier so phased as to reduce the net gain of the amplifier.

NEGATIVE FEEDBACK AMPLIFIER.

Amplifier that employs negative feedback to improve stability, frequency response, or both.

NEGATIVE GLOW.

Luminous glow in a discharge tube between the Crookes dark space and the Faraday dark space.

NEGATIVE IMPEDANCE.

Characteristic of certain electrical devices or circuits, in which the current increases (instead of decreases) when voltage is decreased. If there is no inductance or capacitance in the circuit, the property is called negative resistance.

NEGATIVE ION.

Atom having more electrons than normal.

NEGATIVE LIGHT MODULATION.

In television, negative light modulation occurs when a decrease in initial light intensity causes an increase in the transmitted power.

NEGATIVE MODULATION.

In an amplitude modulated television system, ne-

gative modulation is that form of modulation in which an increase in brightness corresponds to a decrease in transmitted power.

NEGATIVE MODULATION FACTOR.

Ratio of the maximum negative departure of the envelope of an amplitude-modulation wave from its average value, to its average value. This rating is used when the modulation signal wave has unequal positive and negative peaks.

NEGATIVE PHASE-SEQUENCE RELAY.

Relay which functions in conformance with the negative phase—sequence component of the current, voltage, or power of the circuit.

NEGATIVE PICTURE PHASE.

For a television signal, the condition in which increases in brilliancy make the picture signal voltage swing in a negative direction, below the zero level.

NEGATIVE PLATE.

Grid and active material connected to the negative terminal of a storage battery. Electrons flow from this terminal through the external circuit to the positive terminal when the battery is discharging.

NEGATIVE RESISTANCE.

Resistance that varies with current in such a way that when the current increases the voltage drop across the resistance decreases. This characteristic is possessed by an electric arc, and by vacuum tube circuits under certain conditions.

NEGATIVE RESISTANCE REPEATER.

Repeater in which gain is provided by a series or a shunt negative resistance, or both.

NEGATIVE RETURN.

Drainage wire between two points to equalize potential differential for control of electrolysis.

NEGATIVE TEMPERATURE COEFFICIENT.

Temperature coefficient expressing the amount of reduction in the value of a quantity, such as resistance or each degree of increase in temperature.

NEGATIVE TERMINAL.

Terminal of a battery or other voltage source having more than a normal number of electrons.

Electrons flow from it through the external circuit to the positive terminal.

NEGATIVE TRANSMISSION.

Transmission of television signals in such a way that a decrease in initial light intensity causes an increase in the transmitted power.

NEGATIVE ZONE.

Radius around a ship in which radar may be ineffective because of the shape of the beam; like an object on surface of the sea, which is below the range of a searchlight beam, is out of range of the light.

NEGATIVE-GRID GENERATOR.

Conventional oscillator circuit in which oscillation is produced by feedback from the plate circuit to a grid which is normally negative with respect to the cathode.

NEGATIVE-RESISTANCE OSCILLATOR.

Oscillator produced by connecting a resonant circuit to a two-terminal negative resistance device. (Reference: DYNATRON OSCILLATOR, ARC CONVERTER.)

NEGATRON.

1. An electron.
2. Four-electrode vacuum tube having the characteristics of a negative resistance.

NEON.

Inert gas used in neon signs and in some electron tubes. It produces a characteristic bright red glow when ionized. Symbol, Ne; atomic No. 10.

NEON BULB.

Glass bulb containing two electrodes in neon gas at low pressure. When a voltage equal to, or greater than its breakdown voltage is applied, ionization takes place and a pink glow appears.

NEON GLOW LAMP.

Neon-filled two-electrode gas tube having a glass envelope. Ionization of the gas during operation produces a characteristic red glow that can be used for illumination, signaling, and other purposes.

NEON OSCILLATOR.

Oscillator circuit consisting of a neon glow lamp and a capacitor, sometimes also with a resistor. The frequency of oscillation is determined by the capacitor value and by the value of the series resistance.

NEON TUBING.

Glow lamp in which neon is the gas that is ionized by the flow of electric current and produces a luminous glow discharge. It is used chiefly in outdoor advertising signs. There is a popular tendency to use this term for all luminous tubing used in advertising, even though other gases are employed to obtain the different colors. Neon has a characteristic reddish color.

NEPER.

Unit of the same nature as the decibel but differing from it in magnitude. One neper is equivalent to 8.686 decibels.

NEPTUNIUM.

Element 93. Radioactive element produced artificially by nuclear reaction between uranium and neutrons.

NERNST LAMP.

Electric lamp consisting of a short slender rod of zirconium oxide that is heated to brilliant white incandescence by current.

NET. (NETWORK).

1. Organization of stations capable of direct communications on a common channel.
2. Organization of stations capable of direct communications on a common frequency.
3. Interconnection of circuit elements for some particular purpose.

COMMAND. Communications network which connects an echelon of command with some or all of its next subordinate echelons.

DIRECTED. Net in which no station other than the net control station may communicate with any other station, except for the transmission of urgent messages, without first obtaining the permission of the net control station.

FREE. Net in which any station may communicate with any other station in the same net without first obtaining permission from the net control station.

NET AUTHENTICATION.

Identification used on a communications network to establish the authenticity of several stations.

NET CALL SIGN.

Call sign which represents all stations within a network.

NET CONTROL STATION.

Station designated to control traffic and enforce circuit discipline within a given net.

NET INFORMATION CONTENT.

Measure of the essential information contained in a message. It is expressed as the minimum number of bits or Hartleys required to transmit the message with specified accuracy over a noiseless medium.

NET LOSS.

Sum of all the transmission losses occurring between the two ends of a circuit minus the sum of all the transmission gains.

NETWORK.

1. Organization of stations capable of intercommunication but not necessarily on the same channel.
2. Two or more interrelated circuits.

ACTIVE ELECTRIC. Electrical network containing one or more sources of energy.

ALL-PASS. Network designed to introduce phase shift or delay without introducing appreciable attenuation at any frequency.

BALANCING. Lumped circuit elements (inductances, capacitances, and resistances) connected so as to simulate the impedance of a uniform cable or open wire circuit over a band of frequencies. Used with a hybrid coil to change two-wire to four-wire circuits.

BASIC. Electrical network designed to simulate the impedance, neglecting dissipation, of a line at a particular termination.

COMMUNICATIONS. Interconnection of specific organizations or geographical locations by communications means for functional or command purposes. Two or more networks interconnected make up a communications systems. For instance, the AIRCOMNET, AIROPNET, and SACCOMNET are networks which are a part of the AIRCOM Complex. (Reference: COMMUNICATIONS SYSTEMS.)

COMPROMISE. Hybrid balancing network which is designed to balance the average of the impedances that may be connected to the switchboard side of a hybrid arrangement of a repeater.

CONSTANT-K. Ladder network whose product of series and shunt impedances is independent of frequency within the range of interest.

DECOUPLING. Network which is used to prevent the interaction of two circuits.

EQUALIZING. Network connected to a transmission circuit to correct, control, or alter the response of the circuit in a desired way; particularly to equalize the response over a frequency range.

EQUIVALENT. Network which, under certain conditions of use, may replace another network without substantial effect on electrical performance.

INVERSE. Two two-terminal networks are said to be inverse when the product of their impedances is independent of frequency within the range of interest.

LINE EQUIPMENT BALANCING. Hybrid balancing network which is designed to balance equipment such as filters, composite sets, and other line equipment.

NOISE KILLER. Electric network inserted in a telegraph circuit, usually at the sending end, for the purpose of reducing interference with other communication circuits.

PEAKING. Interstage coupling network in which an inductance is effectively in series (series peaking network), or in shunt (shunt

peaking network) with the parasitic capacitance to increase the amplification at the upper end of the frequency range.

SIGNAL-SHAPING. Electric network inserted in a telegraph circuit for improving the wave shape of the received signals.

SYSTEM. 1. Circuits which are connected together under the limitations of a general switching plan.

2. Program circuits extending for some distance with bridged stations connected.

NETWORK ANALYSIS.

Derivation of the electrical properties of a network, giving its configuration and element values.

NETWORK CONSTANT.

1. One of the constants entering into a functional equation, and corresponding to some characteristic property, dimension, or degree of freedom.

2. One of the resistance, inductance, mutual inductance, or capacitance values involved in a circuit or network. If these values are constant, the network is said to be linear. (Reference: PARAMETER.)

NETWORK MASTER RELAY.

Relay that performs the chief functions of closing and tripping an alternating-current, low-voltage network protector.

NETWORK PHASING RELAY.

Relay which functions in conjunction with a master relay to limit closure of the network protector to a predetermined relationship between the voltage and the network voltage.

NETWORK RELAY.

Form of voltage, power, or other type of relay, for specific use in the protection and control of alternating-current, low-voltage networks.

NETWORK SYNTHESIS.

Derivation of the configuration and element values of a network with given electrical properties.

NEUTRAL.

In a normal condition, hence neither positive nor negative. A neutral object has a normal number of electrons.

NEUTRAL CONDUCTOR.

The neutral conductor (when one exists) of a polyphase circuit, or of a single-phase, three-wire circuit is that conductor which is intended to have a potential such that the potential differences between it and each of the other conductors are also equally spaced in phase.

Note. The neutral conductor in a three-wire, direct-current system meets only the magnitude requirements of the above definition.

NEUTRAL DIRECT CURRENT TELEGRAPH SYSTEM.

Telegraph system employing pulses of one polarity and zero-current spacing intervals for transmission of signals over the line.

NEUTRAL GROUND.

Ground connection to the neutral point or points of a circuit, transformer, rotating machine, or system.

NEUTRAL OPERATION.

System whereby marking signals are formed by current impulses of one polarity, either positive or negative, and spacing signals are formed by reducing the current to zero or nearly zero.

NEUTRAL POINT.

1. Point which has the same potential as the point of junction of a group of equal nonreactive resistances, if connected at their free ends, to the appropriate main terminals or lines of the system.

2. In meteorology, the point at which the axis of a high pressure wedge intersects the axis of a low pressure trough.

NEUTRAL RELAY.

Relay in which the action does not depend upon the direction of the current in the circuit.

NEUTRALIZATION.

1. Method of modifying the effect of spurious feedback in an amplifier.

2. Process of nullifying the voltage fed back

through the interelectrode capacitance of an amplifier tube, by providing an equal voltage of opposite phase. Generally necessary only with triode tubes.

CROSS. Neutralization used in push-pull amplifiers whereby a portion of the plate-cathode ac voltage of each tube is applied to the grid-cathode circuit of the other tube through a neutralizing capacitor.

GRID. Neutralizing an amplifier in which the necessary 180° phase shift is obtained by an inverting network in the grid circuit.

INDUCTIVE. Neutralizing an amplifier whereby the feedback susceptance due to an interelement capacitance is cancelled by the equal and opposite susceptance of an inductor.

PLATE. Neutralizing an amplifier in which the necessary 180° phase shift is obtained by an inverting network in the plate circuit.

NEUTRALIZE.

1. Process of nullifying the voltage fed back through the interelectrode capacitance of an amplifier tube, by providing an equal voltage of opposite phase.

2. To counteract any force to attain a neutral condition.

NEUTRALIZED RADIO-FREQUENCY STAGE.

Stage having additional circuit connected between the plate and the grid of the tube to feed back, in the reverse direction, an amount of energy equivalent to that which is feeding back through the tube and causing oscillation. This neutralizes any tendency to oscillate, making the tube function strictly as an amplifier.

NEUTRALIZING CAPACITOR.

Capacitor, usually variable, employed in a radio receiving or transmitting circuit to feed a portion of the signal voltage from the plate circuit of a stage back to the grid circuit.

NEUTRALIZING CIRCUIT.

Portion of an amplifier circuit which provides an intentional feedback path from plate to grid to prevent regeneration.

NEUTRALIZING TOOL.

Small screw driver or socket wrench, partly or entirely nonmetallic, used for making neutralizing or aligning adjustments in radio equipment. Tuning wand.

NEUTRALIZING VOLTAGE.

Voltage developed in the plate circuit (Hazel-tine neutralization) or in the grid circuit (Rice neutralization), used to nullify or cancel the feedback through the tube.

NEUTRINO.

Hypothetical uncharged subatomic particle having approximately zero mass.

NEUTRODYNE.

Amplifier circuit used in early tuned radio-frequency receivers.

NEUTRON.

Uncharged subatomic particle which enters into the structure of atomic nuclei. Its mass is approximately equal to that of a proton.

NEWTON.

Unit of force that induces in one kilogram an acceleration of one meter/sec/sec.

NF (NEWFOUNDLAND).**NFBC (NEWFOUNDLAND BASE COMMAND).****NFLM (NAVAL FORCES EASTERN ATLANTIC AND MEDITERRANEAN).****NG (NATIONAL GUARD).**

1. Militia force under the US Army, corresponding, in status, to the Air National Guard.
2. Generic term for both the Army's National Guard and the Air National Guard.

NGF (NAVAL GUN FACTORY).**NICHOLS RADIOMETER.**

Instrument devised by Nichols to demonstrate that light or other radiation exerts pressure. It can be used to measure the intensity of both visible and infrared radiation.

NICHROME.

Alloy of nickel and chromium, used extensively in wire-wound resistors and in all types of electric heating elements.

NICKLE SILVER.

Silver-white alloy consisting essentially of copper, nickel, and zinc. Formerly called German silver.

NICOL PRISM.

Device for obtaining plane polarized light. It consists of crystals, so cut, and joined that the ordinary ray is reflected out at the site of the crystal while the extraordinary plane polarized ray is freely transmitted.

NIGHT ALARM.

Electric bell or buzzer for attracting the attention of an operator to a signal when the operator is away from his position at the switchboard.

NIGHT EFFECT.

Fluctuations in the polarization of the wave front arriving at an antenna, which cause errors in measurements made with loop type DF systems. These fluctuations are caused by a varying component of sky wave in the received signal which is caused by changes in the ionosphere along the transmission path.

NIGHT ERROR.

Error in a radio direction-finder indication due to night effects or polarization errors.

NIKE.

Surface-to-air guided missile developed for the Army. It is intended for air defense of the Continental United States and forward areas. The nomenclature is X SAM-A-7. The missile is rocket powered and has a range of approximately 30 miles, a speed of approximately Mach 2 and can attain an altitude of 75,000 ft. It is 20 feet long, one foot in diameter, weighs 1000 pounds, and has a fin span of 5 feet, 2 inches. Guidance is by command system and semi-active homing.

NIPKOW DISK.

Flat round plate that has one or more spirals of holes around the outer edge, with successive openings positioned so that rotation of the disk provides scanning of small elementary areas of an image in correct sequence for a mechanical television system.

NIPPLE.

Straight piece of rigid metal conduit not more than two feet in length and threaded on each end.

NITROGEN.

Gas that makes up approximately four-fifths of the atmospheric air. Nitrogen will unit with certain substances, but it does not give off heat in so doing.

NL (NOT LISTED).

NLF (NEAREST LANDING FIELD).

NM (NAUTICAL MILE).

Measure of distance equal to approximately 6,080 feet.

NMC (NATIONAL MIXED COMMITTEE).

NMD (NAVAL MINE DEPOT).

NMR (NATIONAL MILITARY REPRESENTATIVE).

NO (NUMBER).

1. Numeral used to designate something, as an engine on multiengined airplanes, as in engine number 1, the engine on the left, looking forward.
2. Used as a command during drill or exercise. Also said of drilling, exercising, or the like.

NO-LOAD LOSSES OF A TRANSFORMER.

Losses in a transformer that is excited at rated voltage and frequency, but not supplying load. Note. No-load losses include core loss, dielectric loss, and copper loss in the windings due to exciting current.

NOACT (NAVAL OVERSEAS AIR CARGO TERMINAL).

NOB (NAVAL OPERATING BASE).

NOBLE GAS.

One of a group of chemically inert gases, including helium, neon, argon, krypton, and xenon. (Reference: INERT GAS, RARE GAS.)

NODAL POINT.

Node assumed to be a voltage or current node, having zero potential with respect to ground.

NODAL POINT KEYING.

Keying of an arc transmitter at a point in the antenna circuit that is essentially at ground potential at all times.

NODE.

1. Zero point; specifically, a current node is a point of zero current, and a voltage node is a point of zero voltage.
2. Node of a stationary wave is a point in a line of propagation at which the amplitude is a minimum.

NODES.

Points, lines, or surfaces of a stationary wave system which have a zero amplitude.

Note. There are different types of nodes, such as pressure nodes or velocity nodes, and hence the type must be specified.

NOF (NAVAL OPERATING FACILITY).

NOFORN.

Special handling required, not releasable to foreign nationals. Used on certain classified materials.

NOISE.

1. Undesired sound. By extension, any unwanted disturbance within a useful frequency band such as undesired electric waves in any transmission channel or device.
2. Unintelligible signals in a communication system which tends to interfere with proper perception of the desired signals or speech. More loosely, noise is sometimes used as synonymous with the power which causes noise.
3. Unwanted energy (or the voltage produced), usually of random character, present in a transmission system due to any causes.
4. Electrical disturbance which shows as a distortion of the recorded copy.
5. Unwanted sound or disturbances found or introduced in a communication system or appearing on a cathode-ray tube.

AMPLITUDE-MODULATION. Noise produced by undesired amplitude variations of a radio-frequency signal.

BACKGROUND. Total system noise independent of whether or not a signal is present. The signal is not to be included as part of the noise.

CARRIER. Noise produced by undesired variations of a radio-frequency signal in the absence of any intended modulation.

CIRCUIT. 1. Characteristic extraneous sounds other than intelligence found in circuits. Such noise may or may not constitute objectionable interference.

2. In telephone practice, noise which is brought to the receiver electrically from a telephone system, excluding noise picked up acoustically by the telephone transmitters.

COSMIC. Radio static whose origin is due to sources outside the earth. The source may be similar to sunspots or spots on the stars.

IMPULSE. Noise caused by disturbances characterized by abrupt change and short duration. These noise impulses may or may not have systematic phase relationships.

INDUCTION. Audible disturbance in a circuit due to electric coupling with another circuit. When a disturbance can be classified as thump, flutter, crossfire, or crosstalk, it is not considered noise.

RANDOM. Noise which comprises transient disturbances occurring at random. The term is most frequently applied to the limiting case where the number of transient disturbances per unit time is large, so that the spectral characteristics are the same as those of thermal noise. Thermal noise and shot noise are special cases of random noise.

REFERENCE. Magnitude of circuit noise that will produce a circuit noise meter reading equal to that produced by 10-12 watts of electric power at 1,000 cycles per second.

SET. Random noise inherent in a receiver; the aggregate of the thermal agitation and shot-effect-noises.

THERMAL. Random noise in a circuit associated with the thermodynamic interchange of energy necessary to maintain thermal equilibrium between the circuit and its surroundings.

NOISE ANALYSIS.

Determination of the frequency components that make up a particular noise being studied.

NOISE FACTOR

Ratio of the output signal-to-noise ratio in the absence of internally generated noise to the actual output signal-to-noise ratio.

NOISE FIELD INTENSITY.

Field intensity of noise in a transmission medium. Its value is defined only with reference to a definite frequency band.

NOISE FIGURE.

1. Term used to rate the noise qualities of radio receivers. It is equal to the ratio between the signal-to-noise for an ideal receiver and an actual receiver.

2. Of a transducer, the ratio of the output noise power to the portion thereof attributable to thermal noise in the input termination whose noise temperature is standard (290°K). The noise figure is thus the ratio of actual output noise to that which would remain if the transducer itself were made noiseless.

3. Of a linear system at a selected input frequency, the ratio of (A) the total noise power per unit band width at a corresponding output frequency available at the output terminals, to (B) the portion thereof engendered at the input frequency by the input termination, whose noise temperature is standard (290°K) at all frequencies. (Reference: NOISE TEMPERATURE.)

Note 1. For heterodyne systems there will be, in principle, more than one output frequency corresponding to a single input frequency, and vice-versa; for each pair of corresponding frequencies a noise factor is defined.

2. The phrase, "available at the output terminals", may be replaced by "delivered by the system into an output termination," without changing the sense of the definition.

NOISE FILTER.

1. Combination of electrical components which inhibits extraneous signals from passing through or into an electronic circuit.
2. Combination of one or more choke coils and capacitors inserted between the power cord plug of a radio receiver and a wall outlet to block noise interference that might otherwise reach the receiver through the power line.

NOISE GRADE.

Number which defines the relative noise at a particular location with respect to other locations throughout the world.

NOISE KILLER.

1. Device installed in a circuit to reduce its interference to other circuits.
2. Electric network inserted in a telegraph circuit, usually at the sending end, for the purpose of reducing interference with other communication circuits.

NOISE KILLER NETWORK.

Electric network inserted in a telegraph circuit, usually at the sending end, for the purpose of reducing interference with other communication circuits.

NOISE LEVEL.

Strength of extraneous audible sound in a given location; the strength of extraneous signals in a circuit. Volume of noise energy referred to a base, usually measured in decibels.

CARRIER. Noise level produced by undesired variations of a carrier in the absence of any intended modulation.

NOISE LIMITER.

Vacuum-tube circuit that cuts off all noise peaks that are stronger than the highest peak in the desired signal that is being received, thereby preventing loud crashing noises due to strong atmospheric or man-made interference.

NOISE MEASUREMENT.

1. Use of a sound-level meter to measure the loudness in decibels of sounds due to noise.

2. Measurement of telephone line noise in arbitrary units by means of a potentiometer arrangement for comparing this signal noise with that produced by a standard noise generator.

NOISE METALLIC.

Weighted noise current in a metallic circuit at a given point when the circuit is terminated at that point in the nominal characteristic impedance of the circuit.

NOISE QUIETING.

Ability of a receiver to reduce noise background in presence of desired signal, usually expressed in decibels.

NOISE RADAR SYSTEM.

Classified definition. (Reference: AFM 100-50.)

NOISE SILENCER.

Vacuum-tube circuit that can be introduced into a superheterodyne receiver circuit to reduce the effects of static and man-made interference noises. Used chiefly in shortwave communication receivers.

NOISE SOURCE.

Device for generating a random noise signal for (a) temperature-limited diode (cathode saturation); (b) electron multiplier (secondary emission); (c) crystal diode (with positive bias); (d) nonoscillating reflex klystron (detuned repeller voltage) (e) nonoscillating magnetron (reduced voltage).

NOISE SUPPRESSION.

Receiver circuit arrangement that automatically reduces the noise output during periods when no carrier is being received.

NOISE SUPPRESSOR.

Part of a receiver circuit which reduces noise automatically when no carrier is being received (Reference: SQUELCH.)

NOISE TEMPERATURE.

1. At a pair of terminals and at a specific frequency, the temperature of a passive system having an available noise power unit bandwidth equal to that of the actual terminals.

2. Standard reference temperature T for noise measurements is taken as 290°K .

Note. $K T = 0.0250$ volt, where e is the electron charge and K is Boltzmann's constant.

NOISE TRANSMISSION IMPAIRMENT.

Reduction in useful value of a telephone circuit due to noise; expressed db NTI.

NOISE-REDUCING ANTENNA SYSTEM.

Receiving antenna system so designed that only the antenna proper can pick up signals. It is placed high enough to be out of the noise-interference zone, and is connected to the receiver with a shielded cable or twisted transmission line that is incapable of picking up signals.

NOISELESS RECORDING.

Recording of sound on motion-picture film in a carefully controlled manner so there is a minimum of background noise at low sound levels.

NOMINAL BAND.

Frequency band of a facsimile-signal wave equal in width to that between zero frequency and maximum modulating frequency.

Note. The frequency band occupied in the transmitting medium will in general be greater than the nominal band.

NOMINAL BANDWIDTH.

Maximum band of frequencies assigned to a channel.

NOMINAL BEARING ACCURACY.

In reference to D/F, the average accuracy to which a bearing may be determined with the given equipment. When the conditions of measurement are not given, it can be assumed the figures represent an average error experienced over the range of normal operating conditions.

NOMINAL IMPEDANCE.

Impedance of a circuit under conditions at which it was designed to operate. Normally specified at center of operating frequency range.

NOMINAL LINE WIDTH.

In television, the reciprocal of the number of lines per unit length in the direction of line progression.

NOMOGRAPH OR NOMOGRAM.

Chart or diagram on which equations can be solved graphically by placing a straightedge on the two known values and reading the answer where the straightedge crosses the scale for the unknown values.

NONCODE FIRE ALARM SYSTEM.

Local fire alarm system in which the alarm signal is continuous, and usually sounded by vibrating bells.

NONCOHERENT MTI.

Process of using ground clutter itself as a reference signal instead of a coherent reference oscillator. In this method a moving target can be detected only when there is ground clutter at the same range and azimuth as the target.

NONCONDUCTER.

Insulating material.

NONCORROSIVE FLUX.

Flux that is free from acid and other substances that might cause corrosion when used in soldering.

NONCRITICAL DIMENSION.

Dimension of the cross section of a waveguide which can be varied without alteration of the critical frequency (or wavelength).

NONDEVIATIVE ABSORPTION.

Absorption that occurs without any appreciable slowing up of waves. It is normal sky-wave absorption.

NONDIRECTIONAL MICROPHONE.

Microphone with a response that is essentially independent of the direction of sound incidence.

NONDISSIPATIVE STUB.

Nondissipative length of waveguide or transmission line coupled into the sides of a waveguide.

NONEXPENDABLE SUPPLIES.

Articles which are not consumed in use and which ordinarily retain their original identity during the period of use, such as weapons vehicles, machines, tools, and instruments.

NONHOMING TUNING SYSTEM.

Motor-driven automatic tuning system in which

the motor starts up in the direction of previous rotation. If this is incorrect for the new station, the motor reverses, after turning to the end of the dial, then proceeds to the desired station.

NONHYGROSCOPIC.

Material that does not absorb or retain moisture to an appreciable degree.

NONINDUCTIVE CAPACITOR

Capacitor which is so constructed that it has practically no inductance.

NONINDUCTIVE CIRCUIT.

Circuit in which the inductance is reduced to a minimum or is of negligible value.

NONINDUCTIVE LOAD.

Load that has no inductance. It may consist entirely of resistance or it may be capacitive.

NONINDUCTIVE RESISTOR.

Wire-wound resistor which is so constructed that it has practically no inductance.

NONINDUCTIVE WINDING.

Winding constructed so that the magnetic field of one turn or section cancels the field of the next adjacent turn or section.

NONIONIZING RADIATION.

Radiation which does not produce ionization. It includes infrared, ultraviolet and visible light.

NONLINEAR.

Having an output that does not vary in direct proportion to the input.

NONLINEAR COIL.

Coil having an easily saturable core possessing high impedance at low or zero current and low impedance when current flows and saturates the core.

NONLINEAR DISTORTION.

Distortion which occurs in a system when the ratio of instantaneous voltage to current therein (or analogous quantities in other fields) is a function of the magnitude of either.

NONLOADED Q.

Nonloaded Q of an electric impedance is the

value of Q of such impedance without external coupling or connection.

NONMAGNETIC.

Not magnetizable, and therefore not affected by magnetic field. Examples are: air, glass, paper, and wood. All have a magnetic permeability of one, the same as a vacuum.

NONMAGNETIC STEEL.

Steel alloy that contains about 12 percent manganese and sometimes a small quantity of nickel. It is practically non-magnetic, at ordinary temperature.

NONMETALLIC SHEATHED CABLE.

Assembly of two or more rubber-covered conductors in an outer sheath of nonconducting fibrous material that has been treated to make it flame-resistant and moisture-repellent.

NONMULTIPLE SWITCHBOARD.

Manual telephone switchboard in which each subscriber line is attached to only one jack.

NONPHANTOM CIRCUIT.

Two-wire or four-wire circuit which is not arranged for deriving a phantom circuit.

NONPOLARIZED RELAY.

Relay in which the movement of the armature does not depend on the direction of the current in the circuit that controls the armature. (Reference: NEUTRAL RELAY.)

NONREGISTERED ACCOUNTABLE CRYPTOMATERIAL.

Items of cryptomaterial which must be reported on reports of transfer and inventory for the purpose of control.

NONRENEWABLE FUSE UNIT.

Fuse unit that cannot be readily restored for service after operation.

NONRESONANT LINE.

Transmission line whose natural resonant frequency is different from the frequency of the signal that is being transmitted.

NONSCANNING RADARS.

Classified definition. (Reference: AFM 100-50.)

NONSHORTING CONTACT SWITCH.

Selector switch in which the width of the moveable contact is less than the distance between contact clips, so that the old circuit is broken before the new circuit is completed.

NONSINUSOIDAL WAVE.

Wave whose form differs from that of a sine wave, and therefore contains harmonics.

NONSINUSOIDAL WAVEFORM.

Waveform having a shape other than that of a sine wave.

NONSTORAGE CAMERA TUBE.

Television camera tube in which the picture signal is at each instant proportional to the intensity of the illumination on the corresponding area of the scene at that instant.

NONSYNCHRONOUS.

Not related in frequency or speed to other frequencies in a device or circuit.

NONSYNCHRONOUS VIBRATOR.

Vibrator that interrupts a direct-current circuit at a frequency unrelated to the other circuit constants and does not rectify the resulting stepped-up alternating voltage.

NONUNIFORM FIELD.

Field in which at the instant under consideration the scalar (or vector) does not have the same value at every point in the region under consideration.

NOP (NORTH PACIFIC REGION).**NORAD (NORTH AMERICAN AIR DEFENSE COMMAND).****NORC (NAVAL ORDNANCE RESEARCH)**

A large fast calculator which will be used at the Dahlgren, Virginia Proving Grounds of the Navy Guard. The device costs \$2,500,000. It is designed to solve complex and involved problems which would be beyond the practical capabilities of smaller machines. Information is fed into the computer, or the problem is programmed, by means of magnetic tapes. A tape may have a density of 510 characters per inch and operates at a speed of 140 inches per second.

This gives an information rate of approximately 70,000 characters per second. Since the computer works from magnetic tapes, it is possible to program problems anywhere, and forward the tapes for solution. Thus, one computer can serve several organizations. Solutions to problems are also recorded on magnetic tapes. The memory unit of the computer is of the electrostatic type and consists of 66 banks of four cathode-ray tubes. Each tube can store electrostatic charges at 500 different locations on the face of the tube. Provisions are made for monitoring the steps in the solution of a problem by means of high speed printers which operate at 18,000 characters per minute. One application of the computer is the solution of cavitation, or the size of the empty space that forms around a missile moving under water. Previously, the size of this cavity was determined by experiments that required many months to perform.

NORM.

1. The mean or average.
2. Customary condition or degree.

NORMAL.

Standard scale setting for a situation display.

NORMAL CONTACT.

Contact which closes a circuit, permitting current to flow, when in its normal position.

NORMAL DISTRIBUTION.

Most common frequency distribution in statistics. Most errors in experimental sciences follow this distribution. The probability curve is bell-shaped with the greatest probability occurring at the arithmetic average. The areas between two abscissa values under the normal curve show the probability of occurrence of a particular value.

NORMAL ELECTRODE.

Standard electrode used for measuring electrode potentials.

NORMAL IMPEDANCE.

In a transducer, the impedance measured at the input of the transducer when the output is connected to its normal load.

NORMAL INDUCTION.

Limiting induction, either positive or negative, in a magnetic material that is under the influence of a magnetizing force that varies between two specific limits.

NORMAL PROPAGATION.

Generation and spreading, or extension, of radio waves. (Reference: WAVE PROPAGATION.)

NORMAL SAG.

Difference in elevation between the highest point of support of the conductor in a span and the lowest point of the conductor in the span (or in the curve of the conductor in the span produced).

NORMAL THRESHOLD OF AUDIBILITY.

Value of the threshold of feeling of a large number of normal ears. The unit is the dyne per square centimeter.

NORMAL THRESHOLD OF FEELING.

Value of the threshold of feeling of a large number of normal ears. It is expressed in dynes per square centimeter.

NORMALLY CLOSED.

Term applied to a magnetically operated switching device or to its contacts to specify the position taken when the operating magnet is de-energized.

NORMALLY OPEN.

Term applied to a magnetically operated switching device or to its contacts to specify the position taken when the operating magnet is de-energized.

NORMALS.

Keys or relay springs in their common position. The term is vague and vaguely used. Normal may be open or closed.

NORTH AMERICAN AIR DEFENSE COMMAND.

Combined command for the air defense of the Continental United States, Canada, Alaska, and the Northeast area.

NORTH POLE.

Pole of a magnet at which magnetic lines of

force are considered as leaving the magnet. The lines enter south pole.

NORTON'S THEOREM.

Voltage that will exist across an admittance Y ; when connected to any two terminals of a linear network between which the short-circuit current previously was I and the admittance Y is equal to the current I divided by the sum Y and Y .

NOSMEAGLE.

1. AN/APQ-7 airborne bombing radar. It is a 3-cm, high resolution set for blind bombing of land targets at high altitudes. The radar may also be used as a navigational aid and as an altimeter. Impact predictors are included with automatic bomb release. Continuous sighting angle information is provided for the Norden bombsight.

2. AN/APA-55 radar set.

NOSMO.

Airborne radar adapter assembly, AN/APA-46. This adapter converts various impact prediction radars (AN/APQ-7, -13, and AN/APS-15) to synchronous tracking systems, and for each system provides for the synchronization of the optical bombsight operated by the visual bombardier. In addition, pulse doppler modulation of ground signals is used to obtain precision drift measurements. Bombs may be released automatically either by the radar operator or the optical bombardier. A later model, the NOSMO MARK II (AN/APA-47), is similar to the AN/APA-46 except that the optical bombardier has a remote scope and becomes also the radar bombardier.

NOT-GATE.

Electronic circuit whose output is energized if one or more of its inputs are energized.

NOTAM (NOTICE TO AIRMEN).

Report containing information concerning the establishment, condition, or changes in any facility or aid relating to air navigation or landing field.

NOTCH.

Rectangular depression extending below the

sweep line of the radar indicator in some equipment. Echo signals are centered in the notch, thereby facilitating the taking of range and bearing readings. The notch may be expanded to permit closer examination of the desired signal.

NOTCHING.

Term indicating that a predetermined number of separate impulses is required to complete operation of a relay.

Note. Conventional sign used to indicate the pitch, or duration, or both, of a tone.

NOTDF (INTERNATIONAL NOTAM OFFICE).**NOVACHORD.**

Electronic musical instrument that duplicates the effects of an organ by means of oscillator and amplifier circuits.

NR (NON-RECOVERABLE) SUPPLIES.

Expendable, non-recoverable supplies.

NRCL (THE NATIONAL RADIO ENGINEERING ADVISORY COMMITTEE FOR PUBLIC SAFETY, LAND TRANSPORTATION, AND INDUSTRIAL LAND-MOBILE SERVICES).

The primary objective of NRCL is the coordination of points of view relating to technical matters toward the end of effective utilization of channels assigned to the land-mobile services as on the part of the public safety services, the land transportation radio service, and the industrial radio service.

NS (NON-STANDARD).**NSA (NATIONAL SECURITY AGENCY).****NSA (NO STATUS ASSIGNED).****NSA GLOSSARY OF COMMUNICATIONS-ELECTRONICS SECURITY TERMS.**

Classified standardization of terms and definitions pertaining to C-E Security. The NSA Glossary of C-E security terms is available from the office of your unit Cryptosecurity Officer.

NSC (NATIONAL SECURITY COUNCIL).**NSC (NAVAL SUPPLY CENTER).****NSD (NAVAL SUPPLY DEPOT).****NSI (NON-STANDARD ITEM).****NSRB (NATIONAL SECURITY RESOURCES BOARD).****NTSC (NATIONAL TELEVISION SYSTEM COMMITTEE).****NTX (NATIONAL TELETYPEWRITER EXCHANGE).****NUCLEAR ENERGY.**

Energy released by changing the nucleus of an atom.

NUCLEAR FISSION.

Splitting of a nucleus into two approximately equal fragments with the release of energy.

NUCLEAR FORCES.

Forces existing within the nucleus.

NUCLEAR REACTIONS.

Changes which occur in the nucleus of an atom.

NUCLEAR THEORY.

Concept that an atom consists of a central positively charged nucleus that has considerable mass but minute dimensions, surrounded by a number of negatively charged electrons moving in orbits at a relatively great distance from the nucleus.

NUCLEUS.

Central part of the atom which makes up most of the weight of the atom. An atomic nucleus is made up of two kinds of fundamental particles, protons and neutrons. It has a positive charge equal to the number of protons it contains.

NULL.

1. In direction finding, the point at which the minimum radio signal is received when a directional antenna is rotated.

2. Minimum or zero value of current in an electrical circuit.

3. (Cryptography). Symbol having no plain test significance.

NULL DETECTION.

Method of making DF measurements in which the antenna position is altered until positions of minimum received signal strength are found. The true bearing to the signal is then found by noting the antenna position and using a known correction factor.

NULL INDICATOR.

Device that indicates when current, voltage, or power is zero.

NULL METHOD.

Method of measurement in which the reading is taken after the circuit has been balanced to bring the pointer of the indicating instrument to zero, as in a Wheatstone bridge or in a laboratory balance for weighing purposes.

NUMBER.

1. Formally, an abstract mathematical entity which is a generalization of a concept used to indicate quantity, direction, etc. In this sense a number is independent of the manner of its representation.

2. Commonly, a representation of a number as defined above.

3. Expression composed wholly or partly of digits which does not necessarily represent the abstract entity mentioned in the first meaning.

Note. Whenever there is a possibility of confusion between meaning 1. and meaning 2. or 3., it is usually possible to make an unambiguous statement by using number for meaning 1. and numerical expression for meaning 2. or 3.

OPEN. Number on the received number sheet for which a transmission bearing a corresponding number has not been received.

ORIGINATOR'S REFERENCE. Number assigned to a message by an originator to provide a means of reference.

PIN. Numerical position of an insulator pin counting from the left end of a cross-arm as

one faces away from a designated central office.

REGISTER. Identification symbols assigned to registered matter for accounting purposes.

STATION SERIAL. Message reference number assigned within a communication signal center.

NUMBER SYSTEM.

(Reference: POSITIONAL NOTATION.)

NUMBER TAB.

Sequential channel number perforated on tape.

NUMBERED AIR FORCE.

Administrative and tactical unit of the Air Force, normally consisting of one or more wings (smaller than an Air Command).

NUMBERED DOCUMENT.

Document numbered for administrative convenience but for which no accounting is necessary.

NUMERAL FLAGS.

Flags used in visual communications to represent numerals 0 through 9.

NUMERAL PENNANTS.

Pennants used in visual communications to represent the numerals 0 through 9.

NWC (NATIONAL WAR COLLEGE).

NWT (NORTHWEST TERRITORIES).

NYPE (NEW YORK PORT OF EMBARKATION).

NYQUIST INTERVAL.

Maximum separation in time which can be given to regularly spaced instantaneous samples of wave of band width W for complete determination of the wave form of the signal. Numerically, it is equal to $1/2W$ seconds.

O. Precedence prosign for operational immediate message.

O (OFFICE).

1. Room, building, or the like in which a person or a group of persons conduct work of an administrative, clerical or professional character. Group of people, an activity, or an organization identified by reference to the office in or out of which they work.

2. Commonly used designation for certain staff organizations or their activities as in Adjutant General's Office or Secretary's Office.

3. Pilots cockpit or compartment.

O-SERIES.

Series of frequencies believed to exist in the X-ray spectrum of an element and to arise from the transition of electrons from various higher quantum states to the state whose principal quantum number is five.

O-WAVE.

One of the two components into which a radio wave is divided in the ionosphere by the magnetic field of the earth. The other component is the extraordinary wave, or X-wave.

OAKUM.

Material, such as raw flax or frayed rope, used in caulking.

OAS. (ORGANIZATION OF AMERICAN STATES).

OATC (OCEANIC AIR TRAFFIC CONTROL CENTER).

OB (OBSOLETE).

1. Of a plan, regulation, mode of action, and the like: No longer in use or in force; no longer valid; outdated.

2. Of aircraft or other materiel: No longer satisfactory for the purpose for which obtained, due to improvements or revised requirements.

OBI (OMNI-BEARING INDICATOR).

Instrument which presents an automatic and continuous indication of an omni-bearing.

OBJECTIVE.

1. In the abstract sense, it is the effect desired.
2. In the concrete sense, it is the physical object of the action taken.

OBJECTIVE AREA.

Defined geographical area within which is located the objective to be captured or reached by the military forces. This area is defined by competent authority for purposes of command and control.

OBLIGATION.

Amount of an order placed, a contract awarded, a service received, or any other transaction which legally reserves an appropriation or fund for expenditure.

OBLIQUE INCIDENCE.

Transmission of a wave obliquely up to the ionosphere and down again.

OBLIQUE-INCIDENCE TRANSMISSION.

Transmission of a radio wave obliquely up to the ionosphere and down again.

OBOE.

British navigational system used primarily for precision bombing and photo reconnaissance operations. It is limited to radio line-of-sight range, and requires 8 MC bandwidth in a frequency range of 3150 to 3240 MC. The line-of-position of the aircraft can be determined to within about ± 25 yards. Two ground stations, sited approximately 100 miles apart, each measure the range between it and the aircraft by pulse interrogation of a responder in the aircraft. One ground station (commonly called the "cat" station) supplies the aircraft with information to enable the pilot to fly a circular course at a constant radial distance from the station. The radial range is so chosen that the arc of flight passes through a preselected target. The second ground station (commonly called the "mouse" station) measures the ground speed of the aircraft along the arc, and from this speed and a pre-knowledge of

OBO

the aircraft altitude and the type of bomb, transmits a bomb release signal to the aircraft. Both cat and mouse stations transmit on the same radio frequency, but use different pulse repetition rates. Tracking signals from the cat station consists of aural indications of the dot-dash type. A steady tone is used for the on-course indication. A series of dots or a series of dashes is heard if the aircraft is off course to the right or to the left respectively. The intensity of both dots and dashes gradually increases as the aircraft deviates further from its proper course until at a distance of about 200 yards off-course, a maximum tone is reached. The outstanding deficiency of this system is that it can provide guidance to only one aircraft at a time.

OBS (OMNI-BEARING SELECTOR).

Instrument capable of being set manually to any desired bearing of an omni-range station, and which controls a course deviation indicator.

OBS (OBSERVATION).

(Reference: OBSERVATION.)

OBSERVATION.

One piece of data, such as a single plot on a control chart.

OBSERVED RADIO BEARING.

Angle between the observed direction of the line of travel of the received radio wave and arbitrarily fixed line (such as the center line of a ship).

OBSOLESCENCE FREE.

So designed that it is not likely to become outdated because of new inventions or new developments. Frequently applied to tube testers and other test instruments.

OBSOLETE TYPE.

Type classification of equipment which no longer meet military needs.

OCAMA (OKLAHOMA CITY AIR MATERIEL AREA).

Air materiel area with headquarters at Oklahoma City, Oklahoma.

OCCLUDE.

To absorb. Some metals will take up gases, and

these gases must be driven out when the metals are incorporated in the electrode structures or supports of vacuum tubes.

OCCLUDED GAS.

Gas absorbed in a material, as in the electrodes, supports, leads, and insulation of a vacuum tube.

OCCULATING LIGHT.

Light having a signal consisting of one light period followed by one dark period, the duration of the light period being equal to or longer than the duration of the dark period and the successive cycle being constant in character.

OCEAN STATION.

Area enclosed by a 210-mile square centered on the designated station and orientated with its axes true north south and east west.

OCEAN STATION CALL SIGN.

Call sign assigned to identify an ocean station vessel assigned to, and occupying, the ocean station identified thereby.

OCLUS (OUTSIDE CONTINENTAL LIMITS OF UNITED STATES).**OCSIGO (OFFICE OF THE CHIEF SIGNAL OFFICER).****OCTAL.**

(Reference: POSITIONAL NOTATION.)

OCTAL BASE.

Tube base having a central aligning key and the position for eight equally spaced pins. Pins not needed for a particular tube are omitted without changing the position of the remaining pins.

OCTAVE.

1. Bandwidth. Bandwidth of one octave is one in which the upper frequency is twice the lower frequency.
2. Audio. Used to describe an audio frequency bandwidth in which the upper frequency is twice the lower frequency.

OCTODE.

Eight-electrode vacuum tube containing an anode, a cathode, a control electrode, and five additional electrodes ordinarily in the nature of grids.

OCTONARY.

(Reference: POSITIONAL NOTATION.)

ODOGRAPH.

Automatic electronic map tracer used in jeeps and other mobile military vehicles for map making and navigation on land. It automatically plots on an existing map or on cross-sectional paper the exact course taken by the vehicle. Phototubes and thyratrons transfer the indication of a precision magnetic compass to a plotting unit actuated by the speedometer drive cable, causing a pencil to trace the course taken on roads or on cross-country movements.

ODR (OMNIDIRECTIONAL RADIO RANGE).

Radio aid to air navigation, using a transmitter that radiates throughout 360° azimuth, providing aircraft with a direct indication of the bearing of the transmitter.

OEL (ORGANIZATIONAL EQUIPMENT LIST).

List of the organizational equipment for a particular organization, used for inventory and automatic requisition.

OERSTED.

Unit of magnetic intensity in the centimeter-gram-second electromagnetic system. The value of the magnetic intensity in oersteds, at any point in a vacuum, is equal to the force in dynes exerted on a unit magnetic pole placed at the point.

OFACS (OVERSEAS FOREIGN AERONAUTICAL COMMUNICATIONS STATION).**OFF COMMUNITY DIAL.**

Small dial office serving an exchange area with no employees located in the building. It is attended from conveniently located near-by points.

OFF-CENTER.

Process by which a selected portion of the area situation display is presented at the center of the situation-display tube.

OFF-CENTER PLAN DISPLAY.

Display consisting of a portion of a PPI display, not including the center.

OFF-CENTER PPI (PLAN POSITION INDICATION) DISPLAY.

Modified type of PPI presentation in which the

sweep origin can be displaced to one side or moved off the face of the cathode-ray tube as a means of expanding the presentation. This action provides better resolution and reduces the area under observation.

OFF-CENTERING BUTTONS.

Series of switches on the left and top of a situation-display console to take off-center action.

OFF-LINE CIPHER.

Method of encryption which is not associated with a particular transmission system and in which the resulting cryptogram can be transmitted by any means.

OFF-LINE CRYPTOGRAPHIC OPERATION.

Technique whereby the encryption of traffic is accomplished prior to its release for transmission.

OFF-NET STATION.

Station not on a tape relay network but which has access to the tape relay network by other means of telecommunication.

OFF-STATION.

Status of an ocean station vessel when outside the limits of its assigned ocean station.

OFF-TARGET JAMMING.

Employment of a jammer at a point removed from the main units of the force. This is done to defeat the enemy's use of our jamming signals to his advantage.

OFFICE ALARM.

Signal calling attention to a total or partial failure, or other abnormal condition, in an office.

OFFICE OF RECORD.

Agency charged with maintaining the ultimate accounting records for registered publications.

OFFICE, CENTRAL.

Switching unit in one location for terminating and interconnecting subscriber's lines and trunks. It has a distinguishing calling code and is not considered an exchange.

OFFICE, COMMUNIT, DIAL.

Small dial office serving an exchange area with no employees located in the building. Attendance is from conveniently located nearby points.

OFFICE, DIAL.

Central office operating on dial signals.

OFFICE, TANDEM.

Central office which operates primarily as a switching point between other central offices in the same exchange and/or nearby exchanges.

OFFICE, TOLL.

Central office where toll line calls are switched.

OFFSET POINT.

Point in space offset from a target's path toward which an interceptor is vectored and from which the final turn to an attack heading is made.

OHM.

Unit of electrical resistance. It is that value of electrical resistance through which one volt will maintain a current flow of one ampere.

OHMIC RESISTANCE.

Resistance to the flow of direct current.

OHMIC VALUE.

Resistance in ohms.

OHMMETER.

Instrument for measuring electric resistance. Ohmmeters are provided with a scale, usually graduated in ohms or meg-ohms.

OHMMETER ZERO ADJUSTMENT.

Potentiometer or other means provided to compensate for the reduction of battery voltage with age in an ohmmeter. The adjustment is usually made by rotating a knob until the meter pointer is at zero on the resistance scale being used.

OHM'S LAW.

Fundamental law of electricity. It expresses the definite relationship existing between the voltage E , the current I , and the resistance R : $E = IR$.

OHMS PER VOLT.

Sensitivity rating for measuring instruments, obtained by dividing the persistence of the instrument in ohms at a particular range by the full-scale voltage value at that range. The higher the ohms-per-volt rating, the more sensitive is the meter.

OIC (OFFICER-IN-CHARGE).

OIL CIRCUIT BREAKER.

Circuit breaker in which the interruption occurs in oil.

OIL FEEDING RESERVOIRS.

Oil storage tanks situated at intervals along the route of an oil filled cable or at oil filled joints of solid cable for the purpose of keeping the cable constantly filled with oil under pressure.

OIL FUSE CUTOUT.

Inclosed fuse cutout in which all or a part of the fuse support is mounted in oil.

OIL SWITCH.

Switch in which the interruption of the circuit occurs in oil.

OIL-FILLED CABLE.

Cable having insulation impregnated with an oil which is fluid at all operating temperatures and provided with facilities such as longitudinal ducts or channels and with reservoirs, or their equivalent, by means of which positive oil pressure can be maintained within the cable at all times, incipient voids promptly filled during period of contraction, and all surplus oil adequately taken care of during periods of expansion.

OIL-IMMERSED FORCED OIL-COOLED TRANSFORMER.

Transformer in which the core and coils are immersed in oil and the cooling is effected principally by forced circulation of oil through some external cooling means.

OIL-IMMERSED SELF-COOLED TRANSFORMER.

Transformer in which the core and coils are immersed in oil and the cooling being effected by natural circulation of air over the cooling surface.

OIL-IMMERSED WATER-COOLED TRANSFORMER.

Transformer in which the core and coils are immersed in oil and the cooling being effected by the circulation of water through a coil installed in the transformer tank and immersed in the oil.

OILED PAPER.

Paper that has been treated with an insulating oil or varnish to improve its insulating qualities.

OJT (ON-THE JOB-TRAINING).**OM VHF.**

Outer Marker (CAA).

OMGUS (OFFICE OF MILITARY GOVERNMENT, UNITED STATES)**OMNI-BEARING.**

Bearing, usually magnetic, of an omni-directional radio range as observed from a vehicle.

OMNI-BEARING CONVERTER.

Electro-mechanical device which combines an omni-range signal with aircraft heading information to furnish electrical signals for the operation of the pointer of a radio magnetic indicator. An omni-bearing converter becomes an omni-bearing indicator when a pointer and dial are added.

OMNI-BEARING INDICATOR.

Instrument which provides automatic and continuous indication of omni-bearing.

OMNI-BEARING LINE.

One of an infinite number of straight lines radiating from the geographical location of a VHF omni-range.

OMNI-BEARING SELECTOR.

Instrument capable of being set manually to any desired omni-bearing, or reciprocal thereof, which controls a course line deviation indicator.

OMNI-DIRECTIONAL.

Directionally universal with regard to the points of the compass.

OMNI-RANGE.

Radio aid to air navigation which creates an infinite number of paths in space throughout 360° azimuth.

OMNIDIRECTIONAL ANTENNA.

Antenna having an essentially nondirectional pattern in azimuth and a directional pattern in elevation.

OMNIDIRECTIONAL RADIO RANGE.

Radio aid to air navigation, using a transmitter that radiates throughout 360° azimuth, providing aircraft with a direct indication of the bearing of the transmitter

OMNIDIRECTIONAL RANGE STATION.

Radionavigation land station in the aeronautical radionavigation service providing direct indication of the bearing of that station from an aircraft.

OMNIGRAPH.

Instrument, containing a buzzer circuit actuated by a perforated tape or other means, for producing Morse code messages for instruction purposes.

ON THE HEAD.

Starting of a radio program on scheduled time.

ON THE NOSE.

Ending of a radio program at exactly the scheduled second.

ON-CALL CHANNELS.

Similar to allocated channels except that full time exclusive use of the channel is not warranted. The user of an on-call channel is authorized to demand exclusive use of the channel for an indefinite period of time. At other times, the on-call channel is part of the common-user system.

ON-COURSE SIGNAL.

Steady monotone radio signal which indicates to the pilot that he is neither too far to the right nor to the left of the radio beam being followed.

ON-LINE CIPHER.

Automatic method of encryption associated with a particular transmission system, whereby signals are encrypted and passed direct to line, to operate the reciprocal equipment at the distant station.

ON-LINE CRYPTOGRAPHIC OPERATION.

Technique whereby the encryption of traffic is accomplished simultaneously with its transmission.

ON-NET STATION.

Station forming part of a tape relay network.

ON-STATION.

Status of an ocean station vessel when within the limits of the assigned ocean station.

ON-TIME PROCESS.

System of encipherment in which a non-repeating key is used once and never re-used.

ONBOARD GUIDANCE SYSTEM.

Automatic system on ballistic missiles and unmanned spaceships that sends steering signals through the flight control system during the terminal phase of propelled flight.

ONDOGRAPH.

Instrument for drawing alternating wave-form curves with a step-by-step method in which a capacitor is charged momentarily about once every hundred cycles, a little further along the wave form each time, and discharged each time into a recording galvanometer.

ONDOMETER.

Frequency meter or wave meter.

ONDOSCOPE.

Glow discharge tube used as an indicator of electric waves.

ONE PART CODE.

Code in which the plain text elements are arranged in alphabetical or numerical order accompanied by their code groups also arranged in alphabetical, numerical, or other systematic order. Note. Equivalent to non-hatted code, used by UK Services.

ONE SPEED.

Synchro system in which the rotor of the synchro generator turns one revolution for each revolution of the shaft whose position is to be reproduced remotely.

ONE-ADDRESS CODE.

(Reference: INSTRUCTION CODE.)

ONE-FLUID CELL.

Cell having the same electrolyte in contact with both electrodes.

ONE-TIME PROCESS, SYSTEM, TAPE OR PAD.

System of encipherment in which a nonrepeating key is used once and never re-used.

ONE-WAY COMMUNICATION.

Transmission of message from one station to one or more receiving stations that have no transmitting apparatus. Applied to certain radio communication systems or inter-communications systems.

ONE-WAY REVERSIBLE OPERATION.

Communication on a circuit in one direction at a time without a break feature.

ONI (OFFICE OF NAVAL INFORMATION).

OOAMA (OGDEN AIR MATERIEL AREA).

OP.

Precedence prosign for operational priority message, operating, or operation.

OPACIMETER.

Instrument for measuring the turbidity of a liquid. A photoelectric opacimeter does this by measuring the amount of light that passes through the liquid. (Reference: TURBIDIMETER.)

OPACITY.

Measurable ability of a substance to obstruct by absorption the transmission of radiant energy such as light. Opacity is thus the degree of non-transparency.

OPAQUE.

1. Not transparent, and hence not passing light rays.
2. Not passing any form of radiant energy.

OPC.

USAF operating program communications-electronics.

OPEN.

1. Condition in which conductors are separated so that current cannot pass.
2. Break or discontinuity in a circuit which can normally pass a current.

OPEN AREA.

Specifically designated area within which the ready identification of airborne objects is not required except during periods of Air Defense Emergency.

OPEN CORE.

Iron core fitting inside a coil but having no external return path, so that the magnetic circuit has a long path through air.

OPEN FUSE CUTOUT.

Inclosed fuse cutout in which the fuse support and fuse holder are exposed.

OPEN MACHINE.

Self-ventilated machine having no restriction to ventilation other than that necessitated by mechanical construction.

Note. In the sense of this definition, an open machine, when the term is used without qualification, is understood not to be splashproof or dripproof.

OPEN NUMBER.

Sequential channel number on the received number sheet for which a transmission bearing a corresponding number has not been received.

OPEN PLUG.

Plug designed to hold jack springs in their open position.

OPEN WIRE.

Conductor separately supported above the surface of the ground.

Note. An open wire is usually a conductor of a pole line.

OPEN-CENTER DISPLAY.

Plan-position indicator display on which zero range corresponds to a ring around the center of the display.

OPEN-CIRCUIT.

1. Condition of an electrical circuit caused by the breaking of continuity of one or more conductors of the circuit; usually an undesired condition.
2. Arrangement of conductors and equipment that depends upon lack of continuity for operation; as open-circuit telegraphy.
3. Circuit which does not provide a complete path for the flow of current.

OPEN-CIRCUIT IMPEDANCE.

Of a line or four-terminal network, the driving-point impedance when the far end is open.

OPEN-CIRCUIT JACK.

Jack that normally leaves its circuit open. The

circuit can be closed only through a circuit connected to the plug that is inserted in the jack.

OPEN-CIRCUIT SIGNALING.

Type of signaling in which no current flows under normal, inoperative conditions.

OPEN-CIRCUIT VOLTAGE.

Voltage at the terminals of a battery or other voltage source when no appreciable current is flowing.

OPEN-PHASE PROTECTION.

Effect of device operative on the loss of current in one phase of a polyphase circuit to cause and maintain the interruption of power in the circuit.

OPEN-PHASE RELAY.

Relay which functions by reason of the opening of one or more phases of a polyphase circuit, when sufficient current is flowing in the remaining phase or phases.

OPEN-WIRE CIRCUIT.

Circuit made up of conductors separately supported on insulators.

OPEN-WIRE LINE.

Wire-line construction consisting of a pair or a number of pairs of wires suspended on poles.

OPEN-WIRE POLE LINE.

Pole line whose conductors are principally in the form of open wire

OPERATING ANGLE.

Electrical angle (portion of a cycle) during which plate current flows in an amplifier or an electronic tube. Operating angles for three types of amplifiers are: class A, 360°; class B, 180° to 360°; class C, less than 180°.

OPERATING AREA.

Separation of most of the telephone companies work into a large geographical unit. An area functions as a complete telephone company up to the executive level.

OPERATING LEVEL OF SUPPLY.

Quantities of materiel required to sustain operations in the interval between requisitions or the

arrival of successive shipments. These quantities should be based on the established replenishment period (monthly, quarterly, etc.).

OPERATING POINT.

Point on a grid voltage-plate current characteristic curve of a vacuum tube which corresponds to the direct voltage value being used for the grid and plate. (Reference: QUIESCENT POINT.)

OPERATING POSITION.

Terminal of a communications channel which is attended by an operator. It is usually used in its singular sense, such as, a radio operator's position or a telephone operator's position. However, certain terminals may require more than one operating position.

OPERATING POWER.

Power that is actually supplied to a radio station antenna.

OPERATING ROOM.

Room in which operators handle calls by means of a switchboard.

OPERATING SIGNAL.

Three letter group used as necessary in connection with operations or communications to convey orders, instructions, requests, reports, and information to facilitate communications.

OPERATING VOLTAGES.

Direct voltages applied to the electrodes of a vacuum tube under operating conditions.

OPERATION.

Military action, or the carrying out of a military mission which may be strategic, tactical, service, training, or administrative; the process of carrying on combat on land, on sea, or in the air, including movement, supply, attack, defense, and maneuvers needed to gain the objectives of any battle or campaign.

OPERATION CODE.

1. List of operation parts occurring in an instruction code, together with the names of the corresponding operations.
2. Synonym for operation parts of an instruction.

OPERATION MAP.

Map showing the location and strength of friendly forces involved in an operation. It may indicate predicted movements and location of enemy forces.

OPERATION ORDER.

Formal statement or order issued by a commander in connection with a combat operation setting forth situation, mission and communications, and assigning specific tasks to subordinate units.

OPERATION PART.

In an instruction, the part that usually specifies the kind of operation to be performed, but not the location of the operands. (Reference: INSTRUCTION CODE.)

OPERATION PLAN.

1. Plan for operations extending over a considerable space and time and usually based on stated assumptions. It may cover a single operation or a series of connected operations to be carried out simultaneously or in succession. It is the form of directive employed by high echelons of command in order to permit subordinate commanders to prepare their supporting plans or orders.
2. Designation plan is often used instead of order in preparing for operations well in advance. An operation plan may be put into effect at a prescribed time or signal and then becomes the operation order.

OPERATION, MANUAL.

Remote operation of a single-motion stepping switch by means of control pulses transmitted from a dial, pushbutton, or other pulsing device.

OPERATION, SELF-CYCLING.

Automatic operating of a single-motion stepping switch.

OPERATIONAL ANNEXES.

Amplifying instructions which are of such a nature, or are so voluminous or technical as to make their inclusion in the body of the plan or order undesirable.

OPERATIONAL IMMEDIATE.

Message precedence designation.

OPERATIONS.

(Reference: FULL-DUPLEX OPERATION, PUSH-TO-TALK OPERATION, PUSH-TO-TYPE OPERATION, ONE-WAY REVERSIBLE OPERATION.)

OPERATIONS PER MINUTE.

Number of functions performed or characters printed per minute. The equipment goes through one complete cycle of operation for each function performed or character printed.

OPERATOR.

Person whose duties include operation, adjustment, and maintenance of a radio transmitter or other communication equipment.

OPERATOR'S ENDORSEMENT.

Notes covering routing instructions, time of delivery or receipt, radio frequency used, the operators' identifying sign, or similar information which are written on messages by sending and receiving operators.

OPERATOR'S LOG.

Chronological record of events relating to the operation of a particular circuit.

OPERATOR'S TELEPHONE SET.

Consists of a telephone transmitter, a head receiver, and associated cord and plug, arranged to be worn so as to leave the operator's hands free.

OPM (OFFICE OF PROCUREMENT AND MATERIAL).**OPM (OPERATIONS PER MINUTE).****OPNL (OPERATIONAL).**

1. Of an organization: Activated or organized to carry out an operation delegated by a superior headquarters; actively carrying out an operation; activated or organized, and ready to carry out an operation.
2. Of an installation: Actually operating; suitable for use in an operation.
3. Of equipment: Used in activities connected with the operation of an organization; fit or ready for use in an operation.

4. Of persons or actions: Engaged in, or carried out, in connection with the operation of an organization; engaged, or performed, in a combat operation.

5. Of weather: Suitable for flying operations.

OPORD. (Operation Order).

Formal statement or order issued by a commander in connection with a combat operation setting forth situation, mission and communications, and assigning specific tasks to subordinate units.

OPPOSITION.

Phase relationship between two periodic quantities of the same period when the phase difference between them is one-half of a period.

OPR (OPERATION, OPERATE, OPERATOR).**OPR OD (OPERATIONS ORDER).****OPTIC AXIS, CRYSTAL.**

Direction through a doubly refracting crystal in which light traversing the crystal suffers no double refraction.

OPTICAL ANGLE, CRYSTAL.

Angle of incidence of the X-rays to the actual surface of the quartz crystal or blank as held on the goniometer table of the X-ray machine. Compare with critical angle. Also used to designate angle between optic axes in biaxial crystals.

OPTICAL AXIS.

Z-axis of a crystal.

OPTICAL BENCH.

Horizontal track with a graduated scale, on which lenses and other optical devices may be temporarily mounted for measurements and/or experiments.

OPTICAL FILTER.

Transparent material which absorbs a certain portion of the spectrum, such as for use in the optical path of a camera lens to prevent certain portions of the spectrum from reaching the sensitized negative.

OPTICAL HORIZON.

Locus of points at which a straight line from the given point becomes tangential to the earth's surface.

OPTICAL TWINNING.

Defect occurring in natural quartz crystals in which both the right quartz and left quartz occur in the same crystal. This generally results in small regions of unusable material that are discarded when cutting up a crystal.

OPTIMUM.

Most favorable degree, condition, etc.

OPTIMUM BUNCHING.

Bunching condition required for maximum output in a velocity modulation tube.

OPTIMUM COUPLING.

Degree of coupling that provides maximum transfer of signal energy at a given resonant frequency from one radio-frequency circuit to another. (Reference: CRITICAL COUPLING.)

OPTIMUM TRAFFIC FREQUENCY.

1. General: Most effective frequency at a specified time based on ionospheric propagation predictions. Some authorities prefer to use Optimum Traffic Frequency (FOT) instead of OWF (optimum working frequency); however, both are the same.
2. Specific: Frequency value 15 percent below the maximum usable frequency for F2 layer transmission. Skywave circuits are preferred to operate at the FOT value to insure continuous operation, insuring against the day-to-day variations in maximum usable frequencies.

OPTIMUM WORKING FREQUENCY.

Frequency value 15 percent below the maximum usable frequency for a radio circuit.

OPU.

USAF operation program priorities of programmed units.

OQC (OPERATOR QUALITY CONTROL).

O&R (OVERHAUL AND REPAIR).

OR-CIRCUIT.

(Reference: OR-GATE.)

OR-GATE.

1. Gate whose output is energized when any one or more of the inputs is in its prescribed state.

An or-gate performs the function of the logical inclusive-or.

2. Electronic circuit whose output is energized if one or more of its inputs are energized.

ORBIT.

1. Hypothetical locus of one of the non-nuclear electrons within an atom.
2. Path in which a celestial body moves about the center of gravity of the system to which it belongs; every orbit is basically in the shape of a conic section with the center of gravity at one locus.

ORBIT POINT.

Geographically defined reference point over land or water, used in stationing airborne aircraft.

ORBITAL ELECTRON.

One of those electrons of an atom or a molecule which is often visualized as moving in orbits around the nucleus or nuclei.

ORBITAL ROCKET.

Rocket which is fired into space to circle the earth or another body.

ORBITAL VELOCITY.

Speed at which an object in orbit is moving.

ORD (ORDNANCE).

1. Military weapons, ammunition, explosives, combat vehicles, and battle material collectively, together with the necessary maintenance tools and equipment.
2. Organization or activity that stores, issues, or maintains such material.

ORDER.

Communication, written or oral, which conveys instructions from a superior to a subordinate. In a broad sense the terms order and command are synonymous, however, an order implies discretion as to details of execution whereas a command does not.

DELAYED. Order which has been accepted but which cannot be completed promptly.

PATCH. Circuit order planned for rapid distribution.

WORK. Order to perform work. General term for routine, keep cost, estimated cost billing orders, actual cost bill orders, etc.

ORDER OF BATTLE

Identification, strength, command structure and disposition of the personnel, units and equipment of any military force.

ORDER OF REFLECTION.

Number of hops from earth to ionosphere and back to earth, taken by a radio wave in traveling from one point to another.

ORDER TONE.

Tone sent over trunks to indicate that the trunk is ready to receive an order and to the receiving operator that an order is about to arrive.

ORDER WIRE.

Circuit or channel for dispatching information between operators or testers. (Reference: ENGINEERING CIRCUIT.)

ORDER WIRE CIRCUIT.

Used between telephone exchanges only in asking for connections. The corresponding circuit in radio broadcasting is usually called a cue channel.

ORDINARY RAY.

When light is sent through a double refracting crystal it is separated into two components that are at right angles to each other and are known as the ordinary ray and the extraordinary ray.

ORDINARY WAVE.

1. One of the two components into which a radio wave is divided in the ionosphere by the magnetic field of the earth. Sometimes called the o-wave. The other component is the extraordinary wave, or X-ray wave.

2. Magneto-ionic wave component which, when viewed below the ionosphere in the direction of propagation, has counter-clockwise or clockwise elliptical polarization, respectively, according to whether the earth's magnetic field has

a positive or negative component in the same direction.

ORDINARY WAVE-COMPONENT.

Of the two-wave components which are produced by magnetic double refraction when a radio wave passes through the ionosphere, the one deviating the less in propagation characteristics from those which would exist in the absence of the earth's magnetic field is called the ordinary wave component. This component normally has the higher penetration frequency.

ORDINATE.

Value that specifies distance in a vertical direction on an ordinary graph.

ORGANIC.

Assigned to, and forming an essential part of, a military organization. Organic parts of a unit are those listed in its table of organization, for the Army, the Air Force, and the Marine Corps, and are assigned to the administrative organizations of the operating forces for the Navy.

ORGANIZATIONAL EQUIPMENT.

In Army and Air Force usage, referring to method of use signifies that equipment, other than individual equipment, which is used in furtherance of the common mission of an organization or unit.

ORGANIZATIONAL MAINTENANCE.

In Army and Air Force usage, that maintenance authorized for, performed by, and the responsibility of, a using organization on its own equipment. This maintenance consists normally of inspection, cleaning, servicing, preserving, lubrication, and adjustment as required, and may also include minor parts replacement not requiring highly technical skills.

ORIENT.

Rotate or otherwise adjust with respect to some reference.

ORIENTATION.

Adjustment of the time a teletypewriter receiving apparatus starts selection, with respect to the start signal.

ORIENTATIONAL TWINNING.

Defect occurring in natural quartz crystals in which adjacent regions of quartz have their electrical axes oppositely poled. Each type of axis is usable but not both in the same plate. During manufacture, the dividing line is marked on the crystal and the regions subsequently separated. (Reference: ELECTRICAL TWINNING.)

ORIFICE.

Opening or window in a side or end wall of a wave-guide or cavity resonator through which energy is transmitted.

ORIG (ORIGINATOR).

(Reference: ORIGINATOR.)

ORIGIN.

Point of intersection of the reference axes on a graph.

ORIGINATOR.

Originator of a message is the command by whose authority a message is sent. The originator is responsible for the functions of the drafter and releasing officer. (a) Drafter is a person who actually composes a message for release by the originator or the releasing office. (b) Releasing office is a person who may authorize the transmission of a message for and in the name of the originator.

ORIGINATORS REFERENCE NUMBER.

Number assigned to a message by an originator to provide a means of reference.

ORIOLE.

Air-to-air missile developed for the Navy. The nomenclature is XAAM-N-4. It is powered by a solid-propellant rocket motor and has a range of five miles. This missile was cancelled in mid 1954.

ORIOSCOPE.

Instrument for locating the electrical axes of a quartz crystal and determining their sense.

ORTHICON.

Sensitive television pick-up tube. It requires less light than the iconoscope.

ORTHICONOSCOPE.

Improved form of the iconoscope television camera tube, having an inherent storage efficiency of 100 percent. It employs low-velocity electrons for scanning. (Reference: ORTHICON.)

ORTHOCHROMATIC.

Having equal sensitivity to all colors. In practice, however, the term usually indicates only that the material is sensitive to green as well as to shorter wave lengths.

ORTHOGONAL.

At right angles; rectangularly; meeting, crossing, or lying at right angles.

OSA (OFFICE OF THE SECRETARY OF THE ARMY).

OSAF (OFFICE OF THE SECRETARY OF THE AIR FORCE).

OSC (OSCILLATOR).

(Reference: OSCILLATOR.)

OSCILLATING BEACON.

Beacon having an undulating beam characteristic brought about by periodic motion of the light source near the focal point of the optical system.

OSCILLATING CURRENT.

Current that alternately increases and decreases in magnitude with respect to time according to some definite law.

OSCILLATING QUANTITY.

Quantity which, as a function of some independent variable (such as time), alternately increases and decreases in value, always remaining within finite limits. Example: The discharge current from a capacitor through an inductive resistance (provided the inductance is greater than the product of the capacitance times the square of the resistance).

OSCILLATION.

1. Oscillation is applied to the state of a physical quantity when, in the time interval under consideration, the value of the quantity is continually changing in such a manner that it passes

through maxima and minima. Examples: Oscillating pendulum, oscillating electric current, oscillating electromotive force.

2. Fluctuations in a system or circuit, especially those consisting of the flow of electric currents alternately in opposite directions; also the corresponding changes in voltages.

Note. Vibration is sometimes used synonymously with oscillation, but is more properly applied to the motion of a mechanical system in which the motion is in part determined by the elastic properties of the body.

FREE. Oscillatory currents which continue to flow in a tuned circuit after the impressed voltage has been removed. Their frequency is the resonant frequency of the tuned circuit.

PARASITIC. Undesired, self-sustaining oscillations at a frequency different from the operating frequency, occurring chiefly in vacuum-tube circuits.

OSCILLATOR.

1. Electronic device which generates alternating current power at a frequency determined by the values of certain constants in its circuits. An oscillator may be considered an amplifier with positive feedback with circuit parameters that restrict the oscillations of the device to a single frequency.

2. Nonrotating device which is capable of setting up and maintaining oscillations of a frequency determined by the physical constants of the system, such as a vacuum-tube, spark, or arc generator.

3. Circuit generally using a vacuum tube capable of converting direct current into alternating current of a frequency determined by the inductive and capacitive constants of the circuit.

4. Device used to generate and repetitiously oscillate at radio frequencies. (Reference: TUNED-PLATE/TUNED-GRID OSCILLATOR.)

BARKHAUSEN-KURZ. Circuit for generating ultra-high frequencies, the operation of which is dependent on the variation in the electric field, about the positive grid and negative

plate of a triode, caused by oscillatory electrons in the inter-electrode spaces.

BEAT-FREQUENCY. Oscillator which is used to generate a local signal which, when combined with a signal above the audio range, results in a beat frequency that is audible. Used in superheterodyne receivers for carrier wave reception.

BLOCKING. Relaxation oscillator consisting of an amplifier (usually single-stage) with its output coupled back to its input by means which include capacitance, resistance, and mutual inductance.

COLPITTS. Electron tube oscillator in which a parallel-tuned tank circuit is connected between grid and plate, with the tank capacitance containing two voltage-dividing capacitors in series, with their common connection at cathode potential. When the two voltage-dividing capacitances are the plate-to-cathode and the grid-to-cathode capacitances of the tube.

CRYSTAL. Oscillator circuit in which a crystal is used to control the frequency and to reduce frequency instability to a minimum.

DYNATRON Negative-resistance oscillator in which negative resistance is derived between plate and cathode of a screen-grid tube operating so that secondary electrons produced at the plate are attracted to the higher potential screen grid.

ELECTRON-COUPLED. Oscillator employing a multi-grid tube with the cathode and two grids operating as an oscillator in any conventional manner, and in which the plate circuit load is coupled to the oscillator through the electron stream.

GRID-DIP. Vacuum-tube oscillator having in its grid circuit a sensitive current-indicating meter that dips (reads lower grid current) when energy is drawn from the oscillator, as by a coupled resonant circuit tuned to the oscillator frequency.

HARTLEY. Electron tube oscillator in which a parallel tuned tank circuit is connected between grid and plate, the inductive element of the tank having an intermediate tap at cathode potential.

LOCAL. Oscillator in a superheterodyne circuit whose output is mixed with the received signal to produce a sum or difference frequency equal to the intermediate frequency of a receiver.

MASTER. Oscillator so arranged as to establish the carrier frequency of the output of an amplifier.

NEGATIVE-RESISTANCE. Oscillator produced by connecting a resonant circuit to a two-terminal, negative-resistance, device. A dynatron oscillator and an arc converter are examples.

PHASE-SHAFT. Oscillator produced by connecting between the output and the input of an amplifier; a network having a phase shift of an odd multiple of 180° per amplifier stage at the frequency of oscillation.

PIERCE. Oscillator in which a piezoelectric crystal unit is connected between the grid and the plate of an electron tube, in what is basically a Colpitts oscillator with voltage division provided by the grid-cathode and plate-cathode capacitances of the circuit.

RELAXATION. Device which generates a non-sinusoidal wave by gradually charging and quickly discharging a capacitor or an inductor through a resistor. The frequency of a relaxation oscillator may be self-determined or determined by a synchronizing voltage derived from an external source.

TUNED-GRID. Oscillator whose frequency is determined by a parallel-resonant circuit in the grid circuit coupled to plate to provide the required feedback.

TUNED-GRID TUNED-PLATE. Oscillator having parallel-resonant circuits in both plate and

grid circuits, the necessary feedback being obtained by the plate-to-grid interelectrode capacitance.

TUNED-PLATE. Oscillator whose frequency is determined by a parallel-resonant circuit in the plate circuit, coupled to the grid, to provide the required feedback.

OSCILLATOR CIRCUIT.

Circuit containing inductance, capacitance, and resistance so arranged or connected that a voltage impulse will produce a current which periodically reverses.

OSCILLATOR COIL.

Radio-frequency transformer used in the oscillator circuit of a superheterodyne receiver or in other oscillator circuits to provide the feedback required for oscillation.

OSCILLATOR HARMONIC INTERFERENCE.

Interference occurring in a superheterodyne receiver due to the interaction of incoming signals with harmonics (usually the second harmonic) of the local oscillator.

OSCILLATOR PADDER.

Adjustable capacitor used in series with the oscillator tank circuit of a superheterodyne receiver to permit adjusting the tracking between the oscillator and preselector at the low-frequency end of the tuning dial.

OSCILLATOR QUARTZ.

Used in reference to raw quartz, which is of sufficiently high quantity to be used in the manufacture of oscillator plates. Compare telephone quartz or filter quartz.

OSCILLATOR-MIXER-FIRST DETECTOR.

Single stage used in a superheterodyne receiver to provide the functions of the local oscillator and the mixer-first detector. It usually employs a pentagrid converter tube.

OSCILLATOR-PLATE.

Name given to the finished, shaped, piece of quartz used as a control in radio oscillator circuits. Synonymous with piezoid. The main function of the oscillator-plate is to maintain a given

frequency constant in an electrical circuit. (Reference: QUARTZ OSCILLATOR-PLATE.)

OSCILLATORY CURRENT.

Current whose direction flow periodically reverses.

OSCILLATORY DISCHARGE.

Alternating current of gradually decreasing amplitude which, under certain conditions, flows through a circuit containing inductance, capacitance, and resistance when a voltage is applied. (Reference: DAMPENED WAVES.)

OSCILLATORY SURGE.

Surge which includes both positive and negative polarity values.

OSCILLOGRAM.

Recorder trace or permanent record produced by an oscillograph.

OSCILLOGRAPH.

Device that records the values of a varying electrical quantity. Used as a test instrument to reproduce the wave form of a varying voltage or current.

OSCILLOSCOPE.

Instrument which makes possible the visual inspection of the waveform of rapidly varying quantities. It consists, in general, of three major parts; an amplifier, time-base generating circuits, and a cathode-ray tube for translation of electrical energy into light energy.

OSD (OFFICE OF THE SECRETARY OF DEFENSE).**OSN (OFFICE OF THE SECRETARY OF THE NAVY).****OSOPHONE.**

Telephone receiver for use by practically deaf persons. It applies sound vibrations directly to the bones of the head.

OT.

ITU designation for stations open exclusively to operational traffic of the services concerned.

OT (OVERLAP TECHNICIAN).

In air defense, an airman in the Direction Center Air Surveillance Branch primarily responsible to the Tracking Officer for monitoring the transfer of tracking responsibility between adjacent sectors; however, he may also perform other track-monitor functions within the overlap area assigned to him.

OUT-OF-PHASE.

Having wave forms that are of the same shape but do not pass through corresponding values at the same instants.

OUT-OF-SERVICE JACK.

Jack associated with a test jack which removes the circuit from service when a shorted plug is inserted.

OUTDOOR TRANSFORMER.

Transformer of weatherproof construction.

OUTER MARKER.

Instrument landing system marker which is located on a localizer course line at a recommended distance (normally about 4-1/2 miles) from the approach end of the runway.

OUTER SPACE.

Area in the universe outside the earth's atmosphere and gravisphere.

OUTLET.

Point on the wiring system at which current is taken to supply fixtures, lamps, heaters, motors or current-consuming equipment generally.

OUTLINE PLAN.

Preliminary plan states the mission, the strategic concept, the basic undertaking, and the scope of initial and subsequent operations.

OUTPUT.

1. Current, voltage, power, or driving force delivered by a circuit or device.
2. Terminals or other places where current, voltage, power or driving force may be delivered by a circuit or device.

OUTPUT CAPACITANCE.

Output capacitance of a vacuum tube is the sum of the direct capacitances between the output

electrode (usually the plate) and the cathode and such other electrodes as are operated at the alternating potential of the cathode.

OUTPUT IMPEDANCE.

Impedance presented by a device to the load.

OUTPUT INDICATOR.

Meter or other device connected to an electronic device to indicate variations of signal strength in the output circuits.

OUTPUT METER.

Alternating-current voltmeter connected to the output of a receiver or amplifier in order to measure output signal strength.

OUTPUT METER ADAPTER.

Device that can be slipped over the plate prong of the output tube of a radio receiver to provide a conventional terminal to which an output meter can be connected during alignment.

OUTPUT RATING.

Unmodulated power nominally available at the output terminals of the transmitter when connected to its normal antenna, or to a circuit equivalent thereof. Unless otherwise stated, this is the normal rating of the transmitter. (Reference: CARRIER POWER OUTPUT RATING.)

OUTPUT STAGE.

Final stage in any electronic equipment. In a radio receiver, it feeds the loudspeaker directly or through an output transformer. In an audio-frequency amplifier, it feeds one or more loudspeakers, the cutting head of a sound recorder, a transmission line, or any other load. In a transmitter, it feeds the transmitting antenna.

OUTPUT TRANSFORMER.

Transformer which is used to couple the plate circuit of a power tube, or tubes, to a load, such as a loudspeaker.

OUTPUT TUBE.

Power-amplifier tube designed for use in an output stage.

OUTPUT WINDING.

Of a saturable reactor, a winding, other than a

feedback winding, associated with the load and through which power is delivered to the load.

OUTSIDE PLANT.

In telephone practice, that part of the plant extending from the line of the main distributing frame to the line side of the station or PBX protector or connecting block, or to the line side of the main distributing frame in another central office building. It includes cable, wire, hardware, instruments, and miscellaneous items required in installing a base wire and telephone system.

OVER-ALL SYSTEM PERFORMANCE.

Term which is used to describe the range capability of a radar system. It depends upon the transmitted power, the loss in the propagating medium, and the minimum discernible received signal.

OVER-MODULATION.

More than 100-percent modulation. In amplitude modulation, over-modulation produces positive peaks of more than twice the carrier's original amplitude and brings about complete stoppage of the carrier on negative peaks, thus causing distortion.

OVERBUNCHING.

Condition existing when the buncher voltage of a velocity-modulation tube is more than the value required for optimum bunching of electrons.

OVERCOMPOUNDING.

In a compound-wound generator, the use of sufficient series turns to cause a rise in voltage as the load increases in order to compensate for increased line drop. In a motor, overcompounding causes the speed to increase as the load increases.

OVERCURRENT PROTECTION.

Effect of a device operative on excessive current to cause and maintain interruption or reduction of current flow to the equipment governed.

OVERCUTTING.

Excessive level in disk recording to an extent that one groove cuts through into an adjacent one.

OVERDAMPING.

Any case of a periodic damping in which the amount of damping is greater than that required for critical damping.

OVERDRIVEN AMPLIFIER.

Amplifier stage which is designed to distort the input signal waveform by permitting the grid signal to drive the stage beyond cutoff and/or into plate current saturation.

OVERFLOW.

1. Condition which arises when the result of an arithmetic operation exceeds the capacity of the number representation in a digital computer.
2. Carry digit arising from this condition.

OVERLAP.

1. In teletypewriter practice, the selecting of another code group while the printing of a previously selected code group is taking place.
2. Amount by which the effective height of the scanning facsimile spot exceeds the nominal width of the scanning line.

Note. When using a rectangular spot, overlap may be expressed as a percentage of the nominal width of scanning line.

OVERLAP RADAR.

Long-range radar located in one sector whose area of useful radar coverage includes a portion of another sector.

OVERLAP TECHNICIAN.

Airman in the Direction Center Air Surveillance Branch primarily responsible to the Tracking Officer for monitoring the transfer of tracking responsibility between adjacent sectors; however, he may also perform other track-monitor functions within the overlap area assigned to him.

OVERLAP TELLING CIRCUIT.

Tactical voice circuit which is established as an additional telling circuit for use between adjacent GCI stations, adjacent Early Warning stations, and adjacent filter centers.

OVERLAP ZONE.

Specified area of mutual radar coverage, the center of which is the boundary between two sectors.

OVERLAY.

1. Transparent sheet giving special military information not ordinarily shown on maps. When the overlay is laid over the map on which it is based, its details will supplement the map.
2. Tracing of a photograph, mosaic, or map to present the interpreted features and pertinent detail, or to facilitate plotting.

PREDICTION. An overlay, prepared from the composite overlay, which shows only those structure groupings which, it is predicted, will produce a No. 1, No. 2, or No. 3 radar return at low-gain.

OVERLINE.

In teletypewriter practice, the printing of one group of characters over another.

OVERLOAD.

1. In electronics, that quantity of power from an amplifier or other component or from a whole transmission system which is sufficient to produce unwanted wave-form distortion.
2. Load greater than the rated load of an electric device.

OVERLOAD CAPACITY.

Current voltage or power level beyond which permanent damage occurs to the device considered.

OVERLOAD LEVEL.

Level at which operation ceases to be satisfactory as a result of signal distortion, overheating, damage, etc.

OVERLOAD LEVEL OF TRANSDUCER.

Power level at which the transducer ceases to operate satisfactorily as a result of distortion, heating, breakage, etc.

OVERLOAD PROTECTION.

Effect of a device operative on excessive current, but not necessarily on short-circuit, to cause and maintain the interruption of current flow to the device governed. (Reference: OVERCURRENT PROTECTION.)

OVERLOAD RELAY.

Relay that opens a circuit when the current or voltage in the circuit exceeds a specified level.

OVERPOWER PROTECTION.

Effect of a device operative on the power delivered to an electric circuit in excess of a predetermined amount to cause and maintain the interruption of power in the circuit.

OVERPRINT.

New material printed or stamped upon a map or a chart to show data of importance or special use, in addition to that originally printed.

OVERSHOOT.

1. Initial transient response to a unidirectional change in input which exceeds the steady state response.
2. Results from an unusual atmospheric condition that sets up variations in the index of refraction causing microwave signals to be received where they were not intended.
3. Excessive potential attained by a portion of the main body of a pulse.

OVERSHOOT DISTORTION.

Distortion caused when the maximum amplitude of the signal wave front exceeds the steady state of amplitude of the signal wave.

OVERSPEED PROTECTION.

Effect of a device operative on speed of rotating equipment in excess of a predetermined rate to cause and maintain the interruption of power to the protected equipment.

OVERTHROW DISTORTION.

(Reference: OVERSHOOT DISTORTION.)

OVERTONE.

One of the frequencies with which a vibrating body or system can freely oscillate, in addition to the lowest frequency.

OVERTONE TYPE PIEZOELECTRIC CRYSTAL UNIT.

Crystal unit designed to utilize an overtone of the fundamental frequency of resonance for a particular mode of vibration.

OVHL (OVERHAUL).

Rebuilding, or the extensive repairing and reconditioning, of a piece of equipment, as an aircraft, truck, or the like, or of a component part thereof, which has deteriorated through fair wear and tear.

OW (OPEN WIRE).

Type of wire designation for open wire.

OWF (OPTIMUM WORKING FREQUENCY).

OWNER-USE CIRCUIT.

Circuit which provides communication for a single proprietary Service. It is invariably a unilateral circuit.

OWP

Telegraph (teletypewriter) designation for one-way polar repeater.

OXIDE.

Element combined with oxygen. Rust is an oxide of iron.

OXIDE-COATED CATHODE.

Cathode than has been coated with oxides of alkaline-earth metals to improve electron emission at moderate temperatures.

P

P.

Point-to-point radio (CAA).

P (PENDING).

SAGE expression used to describe track classification (usually computer assigned) indicating that identification action is required.

P/P (POINT-TO-POINT).

Radio communication between two definite fixed stations.

P-TYPE CRYSTAL RECTIFIER.

Crystal rectifier in which forward current flows when the semiconductor is positive with respect to the metal.

PA.

Telegraph (teletypewriter) designation for a type A polenarential repeater.

PABX (PRIVATE AUTOMATIC BRANCH EXCHANGE) OR DIAL PBX.

Has same usage as PBX, but calls within system are completed automatically by dialing station number. Requires an attendant's board to route and complete incoming calls from central office. Stations within system can be allowed to either dial directly out to central office or be made to go through attendant as company policy dictates.

PAC (PACIFIC).

PACIFIC STANDARD TIME.

Time based on the 120th meridian, west longitude.

PACK UNIT.

Term applied to a compact, combination radio transmitter and receiver that can be carried or strapped on the back. Some pack units are popularly known as walkie-talkies.

PACKING.

1. Excessive crowding of carbon particles in a carbon microphone, caused by excessive pressure or by fusion particles due to excessive current, and causing lowered resistance and sensitivity.
2. Material used to seal a joint against leakage.

PACOS.

General message originated by the Commander, Western Area, U.S. Coast Guard, to disseminate information to all Coast Guard ocean station vessels in the Pacific Ocean.

PAD (PORT OF AERIAL DEBARKATION).

Air Force installation, including an airfield, serving as a clearing point either in the U.S. or overseas, at which personnel, equipment, and supplies are unloaded after airlift from a place foreign to the port of aerial debarkation.

PAD.

1. Non-adjustable transducer for reducing the amplitude of a wave without introducing appreciable distortion.
2. Assembly of resistors which presents the proper input and output impedances to the circuits with which it is connected and which provides a fixed value of energy loss.
3. Device which introduces transmission loss into a circuit. It may be inserted to introduce loss or to match impedances.

SWITCHING. Transmission-loss pad automatically cut in and out of a toll circuit for different desired operating conditions.

PADDER.

Oscillator padder in a superheterodyne receiver, comprising a trimmer capacitor inserted in the oscillator tuning circuit to control calibration at the low-frequency end of a tuning range.

PADDER CAPACITOR.

Adjustable capacitor used in conjunction with a main tuning capacitor when ganged tuning of several stages is employed. Its purpose is to permit adjustments for proper tracking of a local oscillator.

PADDING.

Words or phrases, unrelated to the text of a message, added prior to encryption and deleted upon decryption.

PADDING CONDENSER.

Condenser in an LC circuit to position or change its working frequency.

PAE (PORT OF AERIAL EMBARKATION).

Air Force installation, including an airfield, serving as a clearing point either in the U.S. or overseas, at which personnel, equipment, and supplies are loaded for airlift to a place foreign to the port of aerial embarkation.

PAGE COPY.

Message, in page form, which is the result of a transmission.

PAINT.

Leave a picture on a long-persistence screen by the effect of signals on a moving time base.

PAIR.

1. Term applied in electrical transmission to two like conductors employed to form an electric circuit.

2. Two wires off a single circuit associated together by twisting, binding, or other means.

BUNCHED. Group of pairs tied together or otherwise associated for identification.

GENERATOR. Paired conductors used for supplying ringing current.

MULTIPLE. Pairs bridged together to provide several circuit appearances.

PAIR BATTERY.

Paired wires for supplying current.

PAIRED CABLE.

Cable in which the single conductors are twisted together in groups of two.

PAIRING.

Imperfect interlace of lines composing the two fields of one frame of the picture. Instead of having the proper equal spacing, the lines appear in groups of two, hence, pairing.

PAL (PERSONNEL AUGMENTATION LIST).

PALMER SCAN.

Combination of circular or raster and conical scans. The beam is swung around the horizon, and at the same time a conical scan is performed.

PAM (PULSE AMPLITUDE MODULATION).

Type of amplitude modulation sometimes used in telemetry where the information is contained in the relative amplitude of the pulses.

PAM-FM.

System in which several pulse amplitude-modulated subcarriers are used to frequency modulate a carrier.

PAN.

Tilt or otherwise move a television camera vertically and horizontally to keep it trained on a moving object or secure a panoramic effect.

PAN ADAPTOR.

Attachment designed to operate with a search receiver to provide a visual presentation on an oscilloscope screen of a band of frequencies extending above and below the center frequency to which the receiver is tuned.

PAN-RANGE.

Intensity-modulated, A-type indication with slow vertical sweep applied to video. Stationary targets give solid vertical deflection and moving targets give broken vertical deflection.

PANAR RADAR.

Abbreviation for panoramic radar.

PANCAKE COIL.

Coil having the shape of a pancake, usually with the turns arranged in the form of a flat spiral.

PANDO (PLANS AND OPERATION).

PANEL.

1. Specially shaped and/or colored cloth or other material displayed in accordance with a prearranged code to convey messages. (Reference: CODE.)

2. Electrical switchboard or instrument board.

3. Mounting plate of metal or insulation controls and/or other parts of an equipment.

DISCHARGE. Mounts a voltmeter indicating the supply voltage, as well as an ammeter indicating the discharge, on the power board.

DISCHARGE AND DISTRIBUTING-FUSE. Discharge panel mounts the main battery fuse, while the power-distributing panel mounts the central-office, power-distribution-circuit fuse of the power board.

END-CELL CONTROL. Mounts the relays and control switches associated with the cells of the power board.

JACK. Mounting plate or area, rack mounted, in which circuits or circuit elements appear on jacks for testing or interconnection.

JOINT AIDS TO EQUIPMENT AND STANDARDIZATION. Agency of the Joint Communications-Electronics Group charged with joint interest and joint military characteristics and standardization of C-E equipment.

JOINT AIDS TO NAVIGATION. Agency of the Joint Communications-Electronics Group charged with the cognizance of aids to navigation.

JOINT CALL SIGNS. Agency of the Joint Communications-Electronics Group charged with coordination of all matters in connection with the composition, allocation and distribution of all types of call signs and address groups for joint communication.

JOINT COMMUNICATIONS CIRCUIT ENGINEERING. Agency of the Joint Communications-Electronics Group charged with the coordination of all matters pertaining to the communication circuits of the Army, Navy, and Air Force, and the continuing review and analysis of such circuits in order to insure maximum economy consistent with efficiency.

JOINT COMMUNICATIONS PUBLICATIONS. Agency of the Joint Communications-Electronics Group charged with the coordination of all matters pertaining to the preparation, publication and distribution of JCEC publications.

JOINT COORDINATING. Agency of the Joint Communications-Electronics Group which is charged with reviewing all reports before the

JCEC and submitting to it recommended action thereon, prior to final action by the Committee.

JOINT ELECTRONIC WARFARE. Agency of the Joint Communications-Electronics Group charged with the cognizance of electronic warfare matters.

JOINT FREQUENCY ALLOCATION. Agency of the Joint Communications - Electronics Group charged with coordination of all matters in connection with the frequency planning, allocations, coordination and assignments.

JOINT METHODS AND PROCEDURES. Agency of the Joint Communications-Electronics Group charged with the coordination of all matters in connection with the development, formulation and promulgation of joint communications methods and procedures.

JOINT SECURITY AND CRYPTOGRAPHIC. Agency of the Joint Communications-Electronics Group concerned with matters relating to joint cryptographic and other communication security systems and equipment, and the review (from the point of view of the operational aspects involved) of the policies and procedures governing their security and employment.

JOINT STRATEGIC COMMUNICATIONS PLANS: Panel of the Joint Communications- Electronics Group charged with cognizance of strategic communications and electronics policies and plans.

JOINT TEST EQUIPMENT. Agency of the Joint Communications-Electronics Group charged with cognizance of test equipment in the field of electronics.

JOINT WARNING AND TARGET INFORMATION. Agency of the Joint Communications-Electronics Group charged with cognizance of joint doctrines, plans, policies, and techniques relating to the employment of visual, electronic, or

sonic systems peculiar to: surveillance, detection, recognition, identification, warning, interception, control, and control associated with the operational employment of aircraft, gun, or missile control systems.

MARKING. Sheet of material displayed by ground troops for visual signaling to friendly aircraft.

MOTOR-GENERATOR CONTROL. Mounts the generator field rheostats, reverse-current relay, load-control switch, battery-charge switch, current-flow relay, voltmeter, ammeter, and fuses of the power board.

PARALLELING. Used only in connection with motor-generator sets (not rectifiers) of the power board.

RECTIFIER AND ALARM. Mounts the end-cell battery charger, as well as the alarm-circuit apparatus, of the power board.

RINGING-MACHINE CONTROL. Mounts the switches, such as the toggle switches, for starting and stopping the first and second ringing machines of the power board.

SUPERVISORY FUSE. Mounts fuses for the ringing, tone, and supervisory signal distribution circuits.

SUPERVISORY RELAY. Mounts the signal and alarm relays.

PANEL AUTOMATIC TELEPHONE SYSTEM.

Type of dial telephone system in which the switching apparatus is generally characterized by the following features:

1. The contacts of the multiple banks, over which selection occurs, are mounted vertically in flat, rectangular panels.
2. The brushes of the selecting mechanisms are raised and lowered by motor-driven apparatus.
3. The dial pulses are received and stored by controlling mechanisms which govern the subsequent operations necessary in establishing a telephone connection. (Reference: PANEL DIAL SYSTEM.)

PANEL CODE.

Prearranged code designed for visual communications between ground units and friendly aircraft. (Reference: SURFACE CODE.)

PANEL DIAL SYSTEM.

Type of dial telephone system in which the switching apparatus is generally characterized by the following features.

1. The contacts of the multiple banks, over which selection occurs, are mounted vertically in flat, rectangular panels.
2. The brushes of the selecting mechanisms are raised and lowered by motor-driven apparatus.
3. The dial pulses are received and stored by controlling mechanisms which govern the subsequent operations necessary in establishing a telephone connection.

PANEL SYSTEM.

Automatic telephone switching system which is generally characterized by the following features:

1. The contacts of the multiple banks, over which selection occurs, are mounted vertically in flat rectangular panels.
2. The brushes of the selecting mechanism are raised and lowered by a motor which is common to a number of these selecting mechanisms.
3. The switching pulses are received and stored by controlling mechanisms which govern the subsequent operations necessary in establishing a telephone connection.

PANEL TELEPHONE SYSTEMS.

Dial system in which motor-driven wipers travel over a flat, vertical bank under the control of coded pulses from a sender.

PANNING.

Moving a television camera in either vertical or horizontal planes, or a combination, to keep a moving object in the picture or secure a panoramic effect.

PANORAMIC ADAPTOR.

Attachment designed to operate with a search receiver to provide a visual presentation on an

oscilloscope screen of a band of frequencies extending above and below the center frequency to which the search receiver is tuned.

PANORAMIC DISPLAY.

Displayed output of a panoramic receiver, a plot of the receiver output vs. the sweep frequency.

PANORAMIC PRESENTATION.

Presentation of signals as vertical deflections or intensity pips along a line, horizontal distance along the line representing frequency.

PANORAMIC RADAR.

Nonscanning radar which transmits signals omnidirectionally over a wide beam in the direction of interest.

PANORAMIC RECEIVER.

Radio receiver that permits continuous observation on a cathode-ray tube screen of the presence and relative strength of all signals within a wide frequency range. Used in communications for monitoring a wide band, for locating open channels quickly, for indicating intermittent signals or interference, or for monitoring a frequency-modulated transmitter.

PANS (PROCEDURES FOR AIR NAVIGATION SERVICES).**PANTOGRAPH.**

Radar; a system for transmitting and automatically recording data from an indicator to a remote point.

PAPER CAPACITOR.

Fixed capacitor, consisting of two strips of metal foil separated by oiled or waxed paper or other insulating material, and rolled together in compact, tubular form. The foil strips are staggered so one projects from each end of the roll, and the connecting wires are attached to the projecting foil strips.

PAPER CLAMP.

Mechanical device for holding the subject copy or record sheet on the drum of a facsimile transmitter or receiver.

PAR (PRECISION-APPROACH RADAR).

Rapid-scanning radar system which is so located on an airport that aircraft, on approach to the runway served by the system, are presented on radar displays in terms of linear deviation from a desired glide path and in terms of distance to go to the touchdown point on the runway. Control personnel talk to the pilot over conventional air/ground communications circuits, giving information necessary to direct the aircraft through the low approach phase of the landing operation.

PARA (PARAGRAPH).**PARABALLOON.**

Air-inflated radar antenna.

PARABOLA.

Bowl-shaped reflector for radar or microwave radio antennas.

PARABOLIC ANTENNA.

Antenna with a radiating element and a parabolic reflector that concentrates the radiated power into a beam.

PARABOLIC HORN.

Horn whose equivalent cross-sectional radius increases according to a parabolic law.

PARABOLIC MICROPHONE.

Microphone positioned at the focus of a parabolic sound reflector to give highly directional characteristics, such as are required for picking up a band marching down a football field.

PARABOLIC REFLECTOR.

Metallic sheet, formed so that its cross section is in the shape of cylindrical parabola. The antenna elements are placed along the line that runs through the focal point of the parabola, parallel to the leading edge of the reflecting sheet. (Reference: PARABOLOID.)

PARABOLOID.

1. Reflecting surface formed by rotating a parabola about its axis of symmetry. Paraboloidal reflector or dish.
2. Concave reflector of a microwave radar antenna. Properly, a paraboloid is a reflector so

shaped that all rays emanating from a single point (called the focus) on the axis will be reflected in a direction parallel to the axis.

PARAFFIN.

Vegetable wax having insulating and dielectric properties.

PARALLAX.

Apparent displacement of the position of an object caused by a shift in the point of observation. Thus, the pointer of a meter will appear to be at different positions on the scale depending on the angle from which the meter is read. To eliminate errors in meter reading due to parallax, the eye should be directly above the meter pointer.

PARALLEL.

1. Connected to the same pair of terminals, so that current branches out over two or more paths.
2. Condition in which two lines or surfaces extending in the same direction are equally distant at all points.
3. In astronautics, pertaining to the simultaneous transmission of, storage of, or operations on the bits in a word, using separate equipment for each bit.
4. In electronic computers, pertaining to simultaneous transmission of, storage of, or logical operations on the parts of a word, character, or other subdivision of a word, using separate facilities for the various parts.

PARALLEL CIRCUIT.

Two or more electrical devices connected in such a way that the line current may divide between them.

PARALLEL CONNECTION.

Connection of two or more parts to the same pair of terminals so that current divides between the parts, as contrasted to a series connection in which parts are connected end to end so that the same current flows through all parts.

PARALLEL CUT.

Y-cut in a quartz crystal.

PARALLEL DIGITAL COMPUTER.

Computer in which the digits are handled in parallel. Mixed serial and parallel machines are frequently called serial or parallel according to the way arithmetic processes are performed. An example of a parallel digital computer is one which handles decimal digits in parallel, although it might handle the bits which comprise a digit either serially or in parallel. (Reference: SERIAL DIGITAL COMPUTER.)

PARALLEL FEED.

Application of a dc voltage to the plate or grid of a tube in parallel with an ac circuit, so that the dc and the ac components flow in separate paths. (Reference: SHUNT FEED.)

PARALLEL OF LATITUDE.

Circle parallel, at all points, to the equator.

PARALLEL RESONANCE.

Form of resonance which exists when a capacitor and an inductor are connected in parallel. Parallel resonance is characterized by high attenuation at the resonant frequency.

PARALLEL T-NETWORK.

Network composed of separate T-networks with their terminals connected in parallel.

PARALLEL-PLATE GUIDE.

Region bounded by two parallel plates in which energy can be propagated.

PARALLEL-PLATE OSCILLATOR.

Push-pull ultra-high-frequency oscillator circuit making use of two parallel plates as the main frequency determining elements.

PARALLEL-RESONANT CIRCUIT.

1. Resonant circuit in which the applied voltage is connected across a parallel circuit formed by a capacitor and an inductor.
2. Inductor and capacitor connected in parallel to furnish a high impedance at the frequency to which the circuit is resonant.

PARALLEL-ROD OSCILLATOR.

Ultra-high-frequency oscillator circuit in which parallel rods or wires of required length and dimensions form the tank circuits.

PARALLEL-ROD TANK CIRCUIT.

Tank circuit consisting of two parallel rods connected at their far ends, providing the small values of inductance and capacitance in parallel that are required for ultra-high-frequency circuits.

PARALLEL-ROD TUNING.

Tuning method, sometimes used at ultra-high frequencies, in which the position of a sliding shorting bar on two parallel rods is varied for the purpose of tuning the transmitter, receiver, or oscillator.

PARALLEL SERIES.

Circuit in which two or more parts are connected together in parallel to form parallel circuits and in which these circuits are then connected together in series so that both methods of connection appear.

PARALLELING REACTOR.

Reactor for correcting the division of load between parallel-connected transformers which have unequal impedance voltages.

PARAMAGNETIC.

Having a magnetic permeability greater than that of a vacuum and essentially independent of the magnetizing force. In ferromagnetic materials, the permeability varies with the magnetizing force.

PARAMAGNETIC MATERIAL.

Material having a permeability which is slightly greater than that of a vacuum and which is approximately independent of the magnetizing force.

PARAMETER.

1. One of the constants entering into a functional equation, and corresponding to some characteristic property, dimension, or degree of freedom.
2. One of the resistance, inductance, mutual inductance, or capacitance values involved in a circuit or network. (Reference: NETWORK CONSTANT.)
3. Standard in which values may be varied.

PARAPHASE AMPLIFIER.

Amplifier which converts a single input into

a push-pull output. (Reference: PHASE INVERTER.)

PARAPHRASE.

To change the phraselogy of a message without changing its meaning.

PARASITE.

Current in a circuit, due to some unintentional cause, such as inequalities of temperature or of composition; particularly troublesome in electrical measurements.

PARASITIC.

Undesired low or high-frequency signal in an electronic circuit.

PARASITIC ANTENNA.

Antenna that is excited by radiation from other antennas rather than by electrical connection with them.

PARASITIC ELEMENT.

Radiating element, not coupled directly to the feed line of the antenna, which materially affects the pattern of the antenna.

PARASITIC OSCILLATION.

1. Undesired, self-sustaining oscillations at a frequency different from the operating frequency, occurring chiefly in vacuum-tube circuits.
2. Any unwanted oscillation in an oscillator or amplifier stage.

PARASITIC SUPPRESSOR.

Resistor which is connected in the grid circuit of an electron tube for the purpose of suppression of parasitic oscillations.

PARAXIAL RAY.

Any ray parallel to the axial ray in a pencil of light.

PAREN (PARENTHESIS).**PARITY CHECK.**

Check making use of a self-checking code employing binary digits in which the total number of 1's (or 0's) in each permissible code expression is always even or always odd. A check may be made for either even parity or odd parity.

PARSEC.

Astronomical unit of distance equal to 19,150,000,000,000 miles.

PART.

In electronics, a mechanical unit which cannot readily be subdivided. Assembled parts make up a component.

PARTIAL.

Component of a complex tone. Its frequency may be either higher or lower than that of the basic frequency and may or may not bear an integral relation to the basic frequency.

PARTIAL CARRY.

Carry resulting from the addition of carrier not allowed to propagate (when forming the partial product in one step of a multiplication process).

PARTIAL COMMON BATTERY.

Type of telephone system in which the talking battery is supplied by each individual telephone and the signaling and supervisory battery is supplied by the switchboard.

PARTIAL TONE.

Any component of a compound tone.

PARTICLE.

Very small part of matter, such as a molecule, atom, or electron.

PARTICLE VELOCITY.

Particle velocity is the instantaneous velocity of a given infinitesimal part of the medium, with reference to the medium as a whole, due to the passage of a sound wave. The commonly used unit is the centimeter per second.

PARTY LINE.

Subscriber line arranged to serve more than one station, with discriminatory ringing for each station.

PASCHEN'S LAW.

Spark potential between two given terminals in a given gas is proportional to the product of pressure and spark length. For a given voltage, this means that spark length is inversely proportional to pressure.

PASSIVE AIR DEFENSE.

All measures, other than active defense, taken to minimize the effects of hostile air action.

PASSIVE DETECTION.

1. Detection of a target or other object by means that do not reveal the position of the detecting instrument or detector.
2. Instruments sensitive to noise or infrared light means of passive detection; likewise, instruments for detecting radar broadcasts.
3. System employing receivers, analyzers, and appropriate DF antennas capable of intercepting electromagnetic wave emissions from penetration of aircraft.

PASSIVE DETECTION SYSTEM.

Employment of one or more ground-based receivers in an air defense system for the purpose of providing a supplementary early warning.

PASSIVE ECM (ELECTRONIC COUNTER-MEASURES).

(Reference: PASSIVE ELECTRONIC COUNTERMEASURES.)

PASSIVE ELECTRIC NETWORK.

Electric network containing no source of energy.

PASSIVE ELECTRONIC COUNTERMEASURES.

Searching for electromagnetic radiations to determine, for the purpose of ECM use, the existence, origin, and pertinent characteristics of those electromagnetic radiations which the enemy (or potential enemy) may be using.

PASSIVE ELEMENT.

Antenna element energized only by radiation which it receives from one or more primary element.

PASSIVE JAMMING.

Utilization of confusion reflectors to return spurious and confusing signals to the transmitting radar set.

PASSIVE MICROWAVE RADIOMETRY.

Classified definition. (Reference: AFM 100-50.)

PASSIVE MICROWAVE TECHNIQUE.

Classified definition. (Reference: AFM. 100-50.)

PASSIVE NAVIGATIONAL COUNTERMEASURES.

Deliberate control of transmissions from equipment capable of electromagnetic radiation to prevent enemy exploitation of such transmissions for navigational purposes. It includes radio silence, spoiling and masking. Called CONELRAD in US.

PASSIVE RADAR

Classified definition. (Reference: AFM 100-50.)

PASSIVE TRANSDUCER.

Transducer in which the power supplied to the second system is obtained exclusively from the power available from the first system.

PASTE.

Medium, in the form of a paste or jelly, containing an electrolyte. It is positioned adjacent to the negative electrode of a dry cell. In an electrolytic cell, the paste serves as one of the conducting plates.

PAT (PATROL).

1. Action of flying over or about a specified area or airspace to ensure against surprise attack, or to assure ready offensive action if needed.
2. Airplane or airplanes together with the aircrew of aircrews that engage in this action.
3. Action on the ground in which a guard checks security points.

PATCH.

Connecting circuits together temporarily by means of a cord, known as a patch cord.

PATCH BOARD.

Board or panel where circuits are terminated in jacks for patching.

PATCH CORD.

Cord, terminated on each end with a plug, which is used in patching between circuits terminated in jacks.

PATCHING.

Connecting two lines on circuits temporarily by means of patch cords.

PATCHING JACK.

Jack which permits the interconnection of circuit elements.

PATENT.

Document conferring on an inventor for a term of years the exclusive right to make, use, and sell his invention in practical form. It is based on evidence of priority of creative conception, protects from the date the patent is allowed, but does not protect during the period a patent is pending or before an application is made.

PATH.

Line connecting a series of points in space and constituting a proposed or traveled route.

PATH ATTENUATION.

Power loss between transmitter and receiver, due to all causes. It is equal to $10 \log P_t / P_r$, where P_t is the power radiated from the transmitting antenna and P_r is the power available at the output terminals of the receiving antenna, and is expressed in decibels.

PATHFINDERS.

1. Experienced aircraft crews who lead a formation to the drop zone, release point, or target.
2. Airborne teams dropped at an objective to establish and operate signal devices for the purpose of guiding aircraft to drop and landing zones.
3. Radar device, installed in an aircraft, used for navigating or homing to an objective when visibility precludes accurate visual navigation.

PATTERN.

1. Means of specifying the character of a wave in a guide by showing the loops of force existing in the guide for that wave. The pattern identifies the order and the mode of the wave and the cross-section shape of the guide.
2. Geometrical figure used to show the directional qualities of an antenna array.

PAV (PERSONNEL ALLOTMENT VOUCHER).

Obsolete, accounting instrument replaced by the manpower authorization voucher.

PAX. (PRIVATE AUTOMATIC EXCHANGE).

Automatic system exclusively for inter-office dial communication. Has no trunks to central offices. Equipment can be either owned by user directly, or rented from telephone company. This type of system is necessarily usually augmented by a PBX or PABX for outside service.

PAY. (PAYMASTER).

PAY STATION.

A station available for use by the public generally on the payment of a fee which is deposited in a coin collector or is paid to an attendant. (Reference: PUBLIC TELEPHONE STATION.)

PB.

Telegraph (teletypewriter) designation for a type B polarential repeater.

PBX (PRIVATE BRANCH EXCHANGE).

Manual telephone system, employing an attendant to complete all calls, which is located on a business premises. It is equipped with trunks, to a telephone company central office. The equipment is normally owned by the telephone company and rented to the using firm. The attendant is supplied by the user.

**PBX (PRIVATE BRANCH EXCHANGE)
BATTERY.**

Source of energy for the operation of a private branch exchange.

PBX BRIDGED STATION.

Additional telephone connected to the same station line as a PBX station.

PBX STATION.

Telephone connected to PBX switching facilities by means of a PBX station line.

PBX STATION LINE.

Physical circuit which terminates in an appearance at a manual or dial PBX and which is connected to a PBX station.

PBX TRUNK.

Subscriber line used as a trunk between a PBX and the central office which services it.

**PC (PULSATING CURRENT, PROGRAM FOR
COMMUNICATIONS-ELECTRONICS).**
(Reference: PULSATING CURRENT.)

PCAM (PUNCH CARD ACCOUNTING MACHINE).

Machine used in AMC LOGCOM system for processing cards for transmission in message form via this system.

PCL (PARTS CONTROL LIST).

PCM (PULSE CODE MODULATION).

Type of modulation sometimes used in telemetry where the information is contained in digitally coded form, binary digits being formed by the absence or presence of a pulse in an assigned position.

PCP (PROJECTIONIST - COMMAND POST).

Airman responsible for the operation of the command post projector and its associated film-processing equipment in a SAGE center.

PD (PASSIVE DETECTION).

A system employing receivers, analyzers, and appropriate DF antennas capable of intercepting electromagnetic wave emissions from penetration of aircraft.

**PD (PULSE DURATION, PERIOD/FULL STOP
(CIRCUIT)).**

PDI (PILOT DIRECTION INDICATOR).

Meter that indicates to the pilot the direction and amount of change in heading that should be applied at any one time.

PDM (PULSE-DURATION MODULATION).

Pulse-time modulation in which the value of each instantaneous sample of the modulating wave is caused to modulate the duration of the pulse. Note 1. Terms pulse-width modulation and pulse-length modulation also have been used to designate this system of modulation.

Note 2. In pulse-duration modulation and modulating wave may vary the time of occurrence of the leading edge, the trailing edge, or both edges of the pulse.

**P&EML (PERSONNEL AND EQUIPMENT
MODIFICATION LIST).**

List of changes by addition, deletion, or substitution, to a table of organization and equipment, affecting either personnel or equipment, or both.

PE (PERMANENT ECHO).

Return received on a cathode-ray tube as a result of radar beams striking mountains, bridges, or similar fixed objects.

PEA LAMP.

Incandescent lamp having a bulb about the size of a pea, used medically for inspection purposes, for indicating purposes on panels, and in small flashlights.

PEAK.

Maximum instantaneous value of an alternating quantity.

PEAK AMPLITUDE.

Value of the maximum amplitude, voltage or current of a wave.

PEAK DISTORTION.

Largest total distortion of telegraph signals noted during a period of observation.

PEAK FORWARD ANODE VOLTAGE.

Maximum instantaneous anode voltage in the direction in which the tube is designed to pass current.

PEAK INVERSE ANODE VOLTAGE.

Maximum instantaneous anode voltage in the direction opposite to that in which the tube is designed to pass current.

PEAK LOAD.

Maximum load consumed or produced in a stated period of time. It may be the maximum instantaneous load or the maximum average load over a designated interval of time.

PEAK PLATE CURRENT.

Maximum instantaneous plate current passing through the plate circuit of a tube.

PEAK POWER.

1. Mean power supplied to the antenna during one radio-frequency cycle at the highest crest of the modulation envelope taken under conditions of normal operation of a radio transmitter.
2. Maximum power of the radar pulse of a radar transmitter. Since the resting time of a radar transmitter is long in comparison with its operating time, the average power output is quite low in comparison with the peak power.

PEAK POWER OUTPUT.

1. Output power, averaged over a carrier cycle, at the maximum amplitude.

2. Maximum value of the transmitted pulse in a pulse radar system.

PEAK RESPONSE.

Maximum response.

PEAK SOUND PRESSURE.

For any specified time interval, the maximum absolute value of the instantaneous sound pressure in that interval. The unit is the dyne per square centimeter.

PEAK SPEECH POWER.

Maximum value of the instantaneous speech power over the time interval considered.

PEAK VALUE.

Maximum instantaneous value of a varying current, voltage, or power. It is equal of 1.414 times the effective value of a sine wave.

PEAK VOLTMETER.

Voltmeter that reads peak values of an alternating voltage.

PEAK-SIGNAL LEVEL.

Expression of the maximum instantaneous signal power or voltage as measured at any point in a facsimile system. This includes auxiliary signals.

PEAK-TO-PEAK AMPLITUDE.

Amplitude of an alternating quantity measured from positive peak to negative peak.

PEAKING CIRCUIT.

Circuit used to sharpen a wave of any form, whereas a differentiating circuit is designed to sharpen a square wave.

PEAKING NETWORK.

Type of interstage coupling network in which an inductance is effectively in series (series-peaking network), or in shunt (shunt-peaking network) with the parasitic capacitance to increase the amplification at the upper end of the frequency range.

PEAKS.

1. Momentary high-amplitude levels occurring in electronic equipment.

2. Momentary, high-volume levels occurring during a radio program and causing the volume indicator at the studio or transmitter to swing upward.

PEAVEY.

Lever like a canthook, but having the end armed with a gaff.

PEDESTAL.

1. Constant voltage value existing in a television signal just before and after transmission of synchronizing impulses. Blanking signal.
2. Square-wave portion of a trapezoidal wave.
3. Substantially flat-topped pulse which elevates the base level for another wave.

PEDESTAL LEVEL.

Reference direct-voltage value added to the video signal produced by the television camera tube. Synchronizing impulses swing the signal in one direction from the pedestal level, while picture signal elements swing the signal in the other direction by an amount that is proportional to the brightness of the element being scanned.

PEDESTAL PULSE.

Square-wave pulse or gate upon which may be superimposed a video signal or sweep voltage.

PELTIER EFFECT.

Production or absorption of heat at the junction of two metals when a current is passed through the junction. Heat generated by current in one direction will be absorbed when the current is reversed. The rate is proportional to the current.

PELTIER ELECTROMOTIVE FORCE.

That component of the voltage produced by a thermocouple which is due to heat produced by the Peltier effect at the junction of the different metals. It adds to the Thomson electromotive force to produce the total voltage of the thermocouple.

PEN REGISTER.

Device, like a telegraph sounder, which makes an ink mark on a paper tape for the length of time it is energized.

PENCIL BEAM.

Radar beam in which the energy is confined to a narrow, approximately conical, portion of space.

PENCIL MIXER.

Form of crystal mixer.

PENCIL OF LIGHT.

Group of light rays coming from a point source or converging toward a point.

PENCIL TUBE.

Small tube designed especially for operation in the ultra-high-frequency band. Used as an oscillator or RF amplifier.

PENCIL-BEAM ANTENNA.

Unidirectional antenna so designed that transverse cross sections of the major lobe, by planes perpendicular to the direction of maximum radiation, are approximately circular.

PENDANT.

Fitting which is suspended from overhead by means of a flexible cord carrying the current.

PENDING.

Air defense track classification (usually computer assigned) indicating that identification action is required.

PENETRATION FREQUENCY.

1. Of an ionized layer of the ionosphere, the frequency at which the virtual height for a wave component at vertical incidence has a maximum value, caused by penetration of the wave through the layer. Except for the occurrence of sporadic and scattered reflections, it is the highest frequency of waves reflected from the layer at vertical incidence. This has been called the critical frequency.
2. Lowest frequency that an F2 layer transmission mode can have to penetrate the lower E layer. It is the E layer MUF corresponding to the radiation angle for the F2 layer transmission mode.

PENETROMETER.

Instrument for indicating the hardness (penetrating ability) of X-rays. (Reference: QUALIMETER).

PENETRON.

Particle having the same unit negative charge as an electron, but a mass between that of the electron and the proton. Produced by cosmic radiation impinging on gas molecules, or actually forming a part of cosmic ray. (Reference: BARYTRON, DYNATRON, MESOTRON, X-PARTICLE).

PENNANTS, NUMERAL.

Pennants used in visual communications to represent the numerals zero through nine.

PENT (PENTODE).

1. Five-electrode, electron tube containing an anode, a cathode, a control electrode, and two additional electrodes, ordinarily in the nature of grids.
2. Tetrode tube with a suppressor grid.

PENTACHLOROPHENOL.

Wood preservative, characterized by its relative cleanliness, uniform penetration, and freedom from bleeding.

PENTAGRID CONVERTER.

Pentagrid tube used as a converter in a superheterodyne receiver.

PENTAGRID TUBE.

Tube having five grids. It is often called a pentagrid converter tube because its chief use is as a converter (oscillator-mixer-first detector) in superheterodyne receivers.

PENTAPRISM.

Five-sided prism used to bend light through a constant angle, usually 90° , without producing inversion.

PENTATRON.

Five-electrode, vacuum tube, having one cathode, two grids, and two anodes, designed to provide push-pull amplification with a single tube.

PENTODE.

1. Five-electrode, electron tube containing an anode, a cathode, a control electrode, and two additional electrodes, ordinarily in the nature of grids.
2. Tetrode tube with a suppressor grid.

PERCENTAGE IMMEDIATE APPRECIATION.

Percentage of the total number of spoken sentences which are immediately understood without conscious deductive effort when each sentence conveys a simple and easily understandable idea.

PERCENT BREAK.

Percentage used in dial pulse testing. It is a percentage expression of the period of time the dial circuit stands open compared to the total time of the dial signed.

PERCENT MAKE.

1. In pulse testing, the length of time a circuit stands closed compared to the length of the test signal.
2. Percentage of time during a pulse period that telephone dial pulse springs are making contact.

PERCENT PERFORMANCE.

Used in quality control to describe the quality of a given aircraft detection. It is obtained by dividing the actual detection range by the reference range.

PERCENT RIPPLE.

Ratio of the root-mean-square value of the ripple voltage to the average value of the total voltage, expressed in percent.

PERCENTAGE DIFFERENTIAL RELAY.

Differential relay which functions when the difference between two quantities of the same nature exceeds a fixed percentage of the smaller quantity. This term includes relays formerly known as ratio balance relays, biased relays, and ratio differential relays.

PERCENTAGE ERROR OF A METER.

Difference between its percentage of accuracy and 100 percent. A meter whose percentage of accuracy is 95 percent is said to be 5 percent slow, or its error is 5 percent. A meter whose percentage of accuracy is 105 percent is 5 percent fast, or its error is positive 5 percent.

PERCENTAGE MODULATION.

1. In amplitude modulation, the ratio of half the difference between the maximum and minimum amplitudes of an amplitude, expressed in percent.

2. In frequency modulation, the ratio of the actual frequency swing of the frequency swing required for 100 percent modulation, expressed in percentage.

3. The modulation factor multiplied by 100 to express it as a percentage.

PERCENTAGE MODULATION METER.

Instrument used to measure the percentage of modulation of an amplitude-modulation transmitter. Some types contain a cathode-ray tube, while others use a meter for indicating purposes.

PERCENTAGE OF ACCURACY OF METER.

Ratio of the actual meter reading to the true reading expressed as a percent.

PERCENTAGE RIPPLE.

Ratio of the effective value of the ripple voltage of a rectifier or generator to the average value of the total voltage, expressed as a percentage.

PERCUSSIVE WELDING.

Resistance welding process using welding energy suddenly discharged with mechanical force simultaneously applied. The two types in use are electrostatic and electromagnetic percussive welding.

PERFECT CRYSTAL.

Having no mosaic structure, and capable of X-ray reflection in accordance with the Darwin-Ewald-Prins law. (References: IDEAL CRYSTAL.)

PERFECT DIELECTRIC.

Dielectric in which all the energy required to establish an electric field in the dielectric is returned to the electric system when the field is removed. A perfect dielectric must have zero conductivity. Also, all absorption phenomena must be lacking. A vacuum is the only known perfect dielectric. (Reference: IDEAL DIELECTRIC.)

PERFORATOR.

In telegraph practice, a perforator is a device for punching code signals in paper tape for application to a tape transmitter. When the perforation is automatically controlled by incoming signals, the device is called a reperforator.

PERFORMANCE.

Whenever possible, a quantitative measure in specific units; percent, mile, minutes, decibels, scans, volts, watts, etc., describing how well a radar system station or part of a station was operating or otherwise accomplishing its purpose at the time of measurement. (Reference: ABNORMAL PERFORMANCE.)

PERIDYNAMIC LOUDSPEAKER.

Box-type, speaker baffle designed to give good bass response by minimizing acoustic standing waves.

PERIGEE.

That point in the orbit of a satellite which is closest to the Earth; opposite of apogee.

PERIHELION.

That point in the orbit of a planet or comet which is closest to the sun; opposite of aphelion.

PERIKON DETECTOR.

Rectifier-type detector employing two mineral crystals in contact, such as a point of bornite in contact with a mass of zincite.

PERIMETER.

Entire outer edge of a geographical area such as a sector or defense area.

PERIOD.

Time required for the completion of one cycle.

PERIOD LIGHT.

Air navigation light which is identifiable by its time, color or cyclic character.

PERIOD OF AN INSTRUMENT.

Time between two consecutive transits of the pointer (or marking device) in the same direction through the rest position.

PERIODIC ANTENNAS.

Those in which the input impedance varies as the frequency is altered. These include open-end wires and resonant antennas of all kinds.

PERIODIC CURRENT.

Oscillating current, the values of which recur at equal intervals of time.

PERIODIC DAMPING.

Damping in which the pointer of an instrument oscillates about the final position before coming to rest. The point of change between periodic and aperiodic damping is called critical damping.

PERIODIC DUTY.

Type of intermittent duty in which the load conditions are regularly recurrent.

PERIODIC LAW.

When the chemical elements are arranged in the order of their atomic number, chemical properties occur in cycles.

PERIODIC LINE.

Line consisting of successive similar sections, similarly oriented, the electrical properties of each section not being uniform throughout. The periodicity is in space and not in time. An example of a periodic line is the loaded line with loading coils uniformly spaced.

PERIODIC QUANTITY.

Oscillating quantity, the values of which recur for equal increments of the independent variable.

PERIODIC RESONANCE.

Resonance in which the period of frequency of the applied agency maintaining oscillation is the same as the natural period of oscillation of a system. (Reference: NATURAL RESONANCE.)

PERIODIC TABLE.

Table of elements arranged according to the periodic law, first presented by Mendeleeff, in which elements with similar characteristics are logically grouped together.

PERIODIC WAVE.

Wave in which the displacement at each point of the medium is a periodic function of the time.

PERIPHERAL.

Near the boundary or edge; the outer fringe.

PERIPHERAL ELECTRON.

One of the outer electrons of an atom, supposed to be responsible for visible light, thermal radiation, and chemical combination. (Reference: VALENCE ELECTRON.)

PERISCOPE.

Optical instrument designed to displace the line of sight in a vertical direction.

PERMANENT.

Subscriber's line which is short or grounded (or has the receiver off the hook) and thus brings in a permanent signal on the switchboard, or ties up the dial line equipment.

PERMANENT ECHO (PE).

Signal received by a ground-based radar as a result of reflections from fixed objects.

PERMANENT MAGNET.

Piece of hardened steel or other magnetic material that has been strongly magnetized and retains its magnetism indefinitely.

PERMANENT-MAGNET LOUDSPEAKER.

Loudspeaker in which the magnetic field is produced by means of a permanent magnet.

PERMANENT-MAGNET, MOVING-COIL INSTRUMENT.

Meter that depends for its operation on the reaction between the current in a movable coil and the magnetic field of a fixed, permanent magnet.

PERMANENT-MAGNET, MOVING-IRON INSTRUMENT.

Meter that depends for its operation on a movable iron vane that aligns itself in the resultant magnetic field of a permanent magnet and adjacent current-carrying coil.

PERMATRON.

Thermionic vacuum tube in which the control of plate current is effected by a magnetic field instead of a grid, somewhat as in a magnetron.

PERMEABILITY.

Measure of how much better a given material is than air, as a path for magnetic lines of force. The permeability of air is assumed as 1. Permeability is measured as the ratio of magnetic induction to magnetizing force, and is designated by μ (Greek letter mu).

PERMEABILITY TUNING.

Tuning of a resonant circuit by moving a pulverized, iron core in or out of a coil, thereby changing the inductance of the circuit.

PERMEAMETER.

Instrument for measuring the magnetic flux or flux density produced in a test specimen by a given magnetic intensity, so that the magnetic permeability of the material may be computed.

PERMEANCE.

Reciprocal of reluctance.

PERMITTIVITY.

That property of a dielectric material that determines how much electrostatic energy can be stored per unit volume when unit voltage is applied. In effect, it is the ratio of the capacitance of a capacitor filled with a given dielectric to that of the same capacitor having only a vacuum as dielectric. (Reference: DIELECTRIC CONSTANT, SPECIFIC INDUCTIVE CAPACITANCE.)

PERMUTATION TABLE.

Table designed for the systematic construction of code groups. It may also be used to correct garbles in groups of code text.

PERS (PERSONNEL).

1. Body of people employed in or associated with an organization.
2. Members of this body.
3. Headquarters department, division, or section set up to advise the commander or to serve as his monitor on personnel matters.

PERSISTENCE.

Measure of the length of time during which phosphorescent light is emitted from the screen of a cathode-ray tube. Long-persistent screens are used on intensity-modulated indicators, such as the PPI, while test oscilloscopes and deflection-type radar indicators use short-persistent screens. The persistence of the screen is indicated by the final number in the type designation of the tube.

PERSISTENCE OF VISION.

Effect by which we continue to see an object or image for a fraction of a second after it has disappeared. This phenomenon makes it possible to see true continuous motion by watching a

series of individual pictures produced on a television or movie screen.

PERSISTRON.

Outgrowth of Lincoln Laboratory studies aimed at producing a bright and steady display. It is a device in which the processes of electroluminescence and photoconductivity are utilized in a single panel capable of producing a steady or persistent display with pulsed signal input.

PERSON-TO-PERSON CALL.

Telephone call in which the calling party specifies that he wishes to reach a particular person or private-branch-exchange extension. These calls are chargeable from the time the desired person or private-branch-exchange extension answers.

PERSONAL FOR.

Term, followed by the name or title of a particular individual, used in the text of messages to indicate that the text of the message is to receive the attention of that individual. Such messages may be either classified or unclassified. (Reference: ACP 121.)

PERSONAL SIGN.

Signs composed of one or more letters (normally initials) used when endorsing station records and messages to indicate individual responsibility of operating and supervisory personnel.

PERSONALFONE.

Trade name for a two-way, pocket radio which is designed to operate in the commercial bands of 50, 150, and 450 megacycles.

PERSPECTIVE.

Appearance in terms of distance.

PERSUADER.

Element of storage tube which directs secondary emission to electron multiplier dynodes.

PERTURBATION.

Distortion of the orbit of an object in space by the gravitational attraction of a planet or other body.

PET (PETROLEUM).

Oily, flammable liquid found in the earth and used as a source of jet fuel, gasoline, and lubricating oils.

PETOSCOPE.

Photoelectric apparatus for detecting movement of persons or objects by projecting an image on two, complementary, checkered screens. These screens are viewed by phototubes in such a way that movement of the image upsets the balance of light.

PETREL.

Air-to-underwater guided missile developed for the Navy. Nomenclature is XAUM-N-2. It is powered by a turbojet engine and has a maximum speed of approximately mach 0.7. This missile is designed for antisubmarine use. It glides to the water and then uses the self-homing technique for guidance under water.

PETTICOAT INSULATOR.

Insulator having an outward-flaring, lower part that is hollow inside to increase the length of the surface leakage path and keep part of the path dry at all times.

PF (POWER FACTOR, PROXIMITY FUZE).

(Reference: POWER FACTOR, PROXIMITY FUZE.)

PFM (PULSE-FREQUENCY MODULATION).

Type of modulation sometimes used in telemetry where the information is contained in the frequency of the transmitted pulses.

PG (PROGRAM GUIDANCE).

Written statement of program objectives, assumptions, policies, and limitations, expressed in summary form, and used as a basis for preparing the USAF or MDAP program documents.

PHC (PHASE, PHANTOM CIRCUIT).

(Reference: PHASE, PHANTOM CIRCUIT.)

PH (PHILLIPS HEAD).

(Reference: PHILLIPS-HEAD SCREW.)

PHANATRON.

Hot-cathode, gas-discharge tube in which no means is provided for controlling the unidirectional current flow. An 866 mercury-vapor rectifier tube is a familiar example.

PHANTASTRON.

Very stable, triggered, gate-producing circuit, using a pentagrid tube.

PHANTASTRON CIRCUIT.

Electronic device for the production, by triggering, of a square wave which is of controllable, yet very stable, duration. Used in radar and other pulse circuitry.

PHANTOM.

In telephone practice, it is a circuit superimposed on 2-wire circuits, with all three circuits being suitable for transmitting currents in the same frequency range without mutual interference.

PHANTOM CIRCUIT.

Superimposed circuit derived from two suitably arranged pairs of wires called side circuits, with each pair of wires being a circuit in itself and at the same time acting as one conductor of the phantom circuit.

PHANTOM CIRCUITRY.

Superimposed circuit derived usually from either two, 2-wire or two, 4-wire circuits, all the circuits being suitable for the simultaneous transmission of currents in the same frequency range.

PHANTOM COIL.

Coil, originally, used in a phantom circuit for impedance matching. Now, generally any coil, side or phantom, in a phantom circuit. When the term is used, the meaning should be made clear.

PHANTOM GROUP.

1. Group of four, open-wire conductors suitable for the derivation of a phantom circuit.
2. Three circuits which are derived from simplexing two physical circuits, so as to form a phantom circuit.

PHANTOM REPEATING COIL.

Term used to designate a side-circuit repeating coil or a phantom-circuit repeating coil when discrimination between these two types is not necessary.

PHANTOM SIGNALS.

Signals appearing on the screen of a CRT indicator, the cause of which cannot readily be determined and which may be caused by circuit fault, interference, propagation, jamming, etc.

PHANTOM TARGET.

Signal generated, as by an echo box, for checking some phases of radar set performance.

PHANTOM-CIRCUIT LOADING COIL.

Loading coil for introducing a desired amount of inductance in a side circuit and a minimum amount of inductance in the associated phantom circuit.

PHASE.

1. Point or stage in the period to which a rotation, oscillation, or variation has advanced; expressed as a fractional part of the period measured from a standard position or assumed instant of starting.
2. Position of a wave, relative to the beginning of any electrical or mechanical wave. Usually expressed in degrees of an angle, the complete cycle being 360 degrees.
3. Phase of a periodic quantity for a particular value of the independent variable is the fractional part of a period through which the independent variable has advanced, measured from an arbitrary origin. In the case of a simple, sinusoidal quantity, the origin is usually taken as the last previous passage through zone from the negative to positive direction. The origin is generally so chosen that the fraction is less than unity.

PHASE ADVANCER.

Phase modifier which supplies leading reactive volt-amperes to the system to which it is connected. Phase advancers may be either synchronous or asynchronous.

PHASE ANGLE.

1. Phase angle of a periodic quantity for a particular value of the independent variable is the angle obtained by multiplying the phase by 2π , if the angle is to be expressed in degrees.
2. Angle between two vectors representing any

two periodic functions of the same frequency.

3. Difference in phase between corresponding stages of progress in two or more cyclic operations. Expressed in degrees.

PHASE ANGLE OF CURRENT TRANSFORMER.

Angle between the primary-current vector and the secondary-voltage vector reversed. This angle is conveniently considered as positive when the reversed, secondary-current vector leads the primary-current vector.

PHASE ANGLE OF POTENTIAL TRANSFORMER.

Angle between the primary-voltage vector and the secondary-voltage vector reversed. This angle is conveniently considered as positive when the reversed, secondary-voltage vector leads the primary-voltage vector.

PHASE CONDUCTOR.

Phase conductors of a polyphase circuit are those conductors other than the neutral conductor.

PHASE CONSTANT.

Imaginary part of the propagation constant. That part of the propagation constant that refers to the retardation in phase of an alternating current passing through a unit length of transmission line. (Reference: WAVELENGTH CONSTANT.)

PHASE CORRECTION.

Process of keeping synchronous telegraph mechanisms in substantially correct phase relationship.

PHASE CORRECTOR.

Network which is designed to correct for phase distortion.

PHASE DELAY.

Quotient of the insertion phase shift (measured in cycles) derived by the frequency.

PHASE DETECTOR.

1. Circuit which detects both the magnitude and the sign of the phase angle between two sine-wave voltages or currents.
2. Circuit in color television which derives dc correction voltage to maintain subcarrier oscillator in synchronization with color burst reference.

PHASE DEVIATION.

Peak difference between the instantaneous angle of the modulated wave and the angle of the carrier.

PHASE DIFFERENCE.

1. Phase difference between two sinusoidal quantities which have the same period is the fractional part of a period (not greater than one-half) through which the independent variable must be assumed to be advanced with respect to only one of the quantities so that similar values of the fundamental components of the two quantities coincide.

2. Time in electrical degrees by which one wave leads or lags another.

PHASE DISTORTION.

1. Lack of direct proportionality of phase shift to frequency over the frequency range required for transmission; the effect of such departure on a transmitted signal.

2. Impairment of fidelity due to nonlinear phase characteristics which cause various frequencies of an applied wave form to be delayed disproportionately.

3. In a transmission system, that distortion caused by the fact that the transit time through the system is not the same for all frequencies under specified terminal conditions.

PHASE DISTORTION COEFFICIENT.

In a transmission system, the difference between the maximum transit time and the minimum transit time for frequencies within a specified band.

PHASE INDICATOR.

Instrument that indicates when two ac generators are in phase or in synchronism.

PHASE INVERSION.

Phase difference of 180° between two similar wave shapes of the same frequency.

PHASE INVERTER.

Electron-tube circuit which changes the phase of part of the signal voltage by 180° in order to operate a push-pull amplifier stage without using a coupling transformer.

PHASE LOCALIZER.

Localizer, employed with some instrument landing systems, in which left and right signals are differentiated in phase and the magnitude of the deviation is indicated by an amplitude difference.

PHASE MAGNET.

Magnetically operated latch used to phase a facsimile transmitter or recorder. (Reference: TRIP MAGNET.)

PHASE METER.

Instrument for measuring the difference in phase between two alternating quantities of the same frequency.

PHASE MODIFIER.

Device that supplies leading or lagging volt-amperes to the system to which it is connected.

PHASE MODULATION.

1. Method of modulation in which the amplitude of the modulated wave remains constant, while varying in phase with the amplitude of the modulating signal. A PM wave is electrically identical to a modifier FM wave and vice versa.

2. Angle modulation is modulation in which the angle of a sine-wave carrier is caused to depart from the carrier angle by an amount proportional to the instantaneous value of the modulating wave.

3. Phase of the audio modulating signal is varied in accordance to the superimposed intelligence. Unlike amplitude modulations, in both phase modulation and frequency modulation, the average energies of the modulated signals are the same.

PHASE REVERSAL.

Change of $1/2$ cycle or 180° in phase.

PHASE SHIFT.

Change in the phase of a sinusoidal wave.

PHASE SHIFTER.

Device for altering the phase of a wave.

PHASE SPLITTER.

1. Device which produces, from a single input wave, two or more output waves which differ in phase from one another.

2. In color television, the stage which takes I and Q signals from demodulators and produces four signals, positive and negative I and Q, and feeds them to matrix.

PHASE UNDERVOLTAGE PROTECTION.

Effect of a device operative on the reduction of voltage in one phase of a polyphase circuit to cause and maintain the interruption of power in the circuit.

PHASE UNDERVOLTAGE RELAY.

Relay which functions by reason of the reduction of one phase voltage in a polyphase circuit.

PHASE VELOCITY.

Velocity of light, times the ratio of the signal wavelength in the medium to its free space wavelength.

PHASE VELOCITY OF A SINUSOIDAL WAVE.

Velocity of travel of an equiphase surface in the direction of the wave normal.

PHASE WAVE.

Wave or wave group, assumed in wave mechanics to be associated with an elementary moving particle such as an electron or a proton.

PHASE-BALANCE RELAY.

Relay which functions by reason of a difference between two quantities associated with different phases of a polyphase circuit.

PHASE-FAILURE PROTECTION.

Effect of a device, operative upon the failure of voltage in one leg of a polyphase circuit, to cause and maintain the interruption of power in all legs of the circuit.

PHASE-MODULATED TRANSMITTER.

Transmitter in which modulation is accomplished by shifting the phase of the carrier in accordance with the modulating signal.

PHASE-MODULATED WAVE.

Phase-modulated, sinusoidal wave is one in which the argument contains a term, the wave form of which is similar to that of the signal to be transmitted.

PHASE-PROPAGATION RATIO.

Propagation ratio divided by its magnitude. It is

expressed as a unit vector of the same angle as the propagation ratio.

PHASE-REVERSAL PROTECTION.

Effect of a device operative on the reversal of the phase sequence in a polyphase circuit to cause and maintain the interruption of power in the circuit.

PHASE-ROTATION RELAY.

Relay which functions in accordance with the order in which the phase voltages successively reach their maximum positive values. (Reference: PHASE-SEQUENCE RELAY.)

PHASE-SEQUENCE RELAY.

Relay which functions in accordance with the order in which the phase voltages successively reach their maximum positive values. (Reference: PHASE-ROTATION RELAY.)

PHASE-SHIFT OSCILLATOR.

Oscillator produced by connecting, between the output and the input of an amplifier a network having a phase shift of an odd multiple of 180° per amplifier stage at the frequency of oscillation.

PHASE-SPLITTING CIRCUIT.

Circuit that produces, from the same input wave form, two output wave forms that differ in phase from each other.

PHASER.

Device, in facsimile, for adjusting the equipment so that the recorded elemental area bears the same relation to the record sheet as the corresponding transmitted elemental area bears to the subject copy in the direction of the scanning line.

PHASING.

In facsimile, adjustment of the picture position along the scanning line.

PHASING CAPACITOR.

Capacitor used in a crystal-filter circuit to neutralize the capacity of the crystal holder.

PHASING LINE.

That portion of the length of scanning line set aside for the phasing signal in a facsimile system.

PHASING PULSE.

Short pulse of signal employed for phasing the recorder with the transmitter in a facsimile system.

PHASMAJECTOR.

Special, vacuum tube used to produce a television signal from a fixed image for test purposes. The image is printed on the signal plate inside the tube. (Reference: MONOSCOPE, MONOTRON.)

PHENOLIC MATERIAL.

Thermosetting plastic material available in many different types, any of which may be compounded with fillers and reinforcing agents to provide a broad range of physical, electrical, chemical, and molding properties for industrial application.

PHIB (AMPHIBIAN, AMPHIBIOUS).

Vehicles or equipment designed to be operated or used on either land or water.

PHIL (PHILIPPINE).**PHILLIPS-HEAD SCREW.**

Screw having in its head a recess in the shape of an indented cross instead of the conventional slot. It is inserted or removed with a special phillips-head screwdriver that automatically centers itself in the screw.

PHON.

Unit of loudness based on the hearing ability of the average human ear.

PHONAUTOGRAPH.

Early device for recording the wave form of a sound.

PHONE.

Headphone, used in radio communications to convert audiofrequency signals into sounds. Usually worn as a pair, one for each ear.

PHONETIC ALPHABET.

List of standard words used to identify letters in a message transmitted by radio or telephone.

PHONIC WHEEL.

Synchronous motor, geared to a revolution counter, used to measure the frequency of the alternating or interrupted current that drives it. In

certain synchronous multiplex systems, either of two wheels, one at the receiving station and the other at the sending station, which rotate synchronously because they are energized by the same alternating current. Modern synchronous electric clocks are, in a sense, phonic wheels.

PHONO ADAPTER.

Device that slips under a tube or is otherwise connected to a radio receiver and provides terminals to which an electric phonograph pickup can be connected so as to utilize the audio-frequency system and loudspeaker of the receiver for reproduction of phonograph records.

PHONODEIK.

Apparatus that photographically records the wave form of a sound on a moving film. Sound waves acting on a glass diaphragm cause a tiny mirror to oscillate and reflect a beam of light back and forth across moving film.

PHONOGRAPH.

Instrument for converting the groove variations of a phonograph record into sound waves.

PHONOGRAPH PICKUP.

Mechanoelectrical transducer which is actuated by modulations present in the groove of the recording medium and which transforms this mechanical input into an electrical output.

PHONOMETER.

Instrument for measuring the intensity of a sound. The modern, electronic version is the soundlevel meter.

PHONOSCOPE.

Instrument for recording wave forms of sound.

PHOSPHOR.

Layer of luminescent material, applied to the inner face of a cathode-ray tube, which fluoresces during bombardment by electrons and phosphoresces after bombardment.

PHOSPHORESCENCE.

Form of luminescence in which the emission of light continues for some time after excitation has ceased.

PHOTO (PHOTO, PHOTOGRAPH (ER) (IC)).

PHOTOCATHODE.

Cathode that emits electrons under the influence of radiant energy such as light. Used in phototubes.

PHOTOCELL.

Photoelectric cell.

PHOTOCHEMICAL.

Pertaining to chemical activity produced by the absorption of radiant energy by molecules, ions, and atoms.

PHOTOCHEMICAL EQUIVALENTS.

Principle stated by Einstein, that, in photochemical action, each effective light quantum is transformed entirely into chemical energy.

PHOTOCONDUCTIVE CELL.

Photoelectric cell in which the electrical resistance varies inversely with the intensity of light that strikes the cell's active material.

PHOTOCONDUCTIVITY.

Electrical conductivity which varies with illumination because of ionization, as in gases, selenium, and some nonmetallic crystals.

PHOTODISINTEGRATION.

Disintegration of an atomic nucleus by the action of radiant energy.

PHOTODISSOCIATION.

Dissociation or disintegration of a chemical compound by the action of radiant energy.

PHOTOELECTRIC.

Pertaining to the electrical effects of light or other radiation. These effects can be emission of electrons, generation of a voltage, or a change in electrical resistance upon exposure to light.

PHOTOELECTRIC ABSORPTION.

Conversion of radiant energy into the energy of photoelectric emission.

PHOTOELECTRIC CELL.

General term applying to any cell whose electrical properties are affected by illumination, such as photovoltaic or photoconductive cells. (Reference: PHOTOCELL.) These two terms should

not be used for phototubes, because they are vacuum tubes and not cells.

PHOTOELECTRIC CONDUCTIVITY.

Property of certain crystals causing them to increase in conductivity when illuminated, as in a selenium cell.

PHOTOELECTRIC CONSTANT.

Quantity that, when multiplied by the frequency of the radiation that is causing emission of electrons, gives, in centimeter-gram-second units, the voltage absorbed by the escaping photoelectron. The constant is equal to h/e , where h is Planck's constant and e is the electronic charge.

PHOTOELECTRIC COUNTER.

Industrial, electronic control employing a phototube or photocell and an amplifier to count objects interrupting a light beam.

PHOTOELECTRIC CURRENT.

Current of electrons emitted from the cathode of a phototube under the influence of light.

PHOTOELECTRIC DOOR OPENER.

Photoelectric control used to actuate a hydraulic or electrical door-opening system.

PHOTOELECTRIC EFFECT.

1. Emission of electrons from a substance by the action of radiant energy being absorbed by the substance.
2. The loss of electrons by an insulated conductor when exposed to light.

PHOTOELECTRIC ELECTRON-MULTIPLIER TUBE.

Vacuum phototube that employs secondary emission to amplify the electron stream emitted from the illuminated photocathode.

PHOTOELECTRIC EMISSION.

Emission of electrons from a body under the influence of suitable radiation.

PHOTOELECTRIC FLAME-FAILURE DETECTOR.

Industrial electronic control, employing a phototube and amplifier to actuate an electromagnetic or other valve to cut off fuel flow when the fuel-consuming flame is extinguished and no light falls on the phototube.

PHOTOELECTRIC INSPECTION.

Quality control of a product by means of a phototube, light beam system, and associated electronic equipment.

PHOTOELECTRIC INTRUSION-DETECTOR.

Burglar-alarm system in which interruption of a light beam by an intruder reduces the illumination on a phototube and thereby closes an alarm circuit.

PHOTOELECTRIC MATERIAL.

Material that will emit electrons when illuminated in a vacuum. Examples are barium, caesium, lithium, potassium, rubidium, sodium, and strontium.

PHOTOELECTRIC MEMBRANE MANOMETER.

Instrument for measuring or recording very small changes in pressure by directing a light beam on a tiny mirror attached to a membrane in the pressure system and picking up with a phototube the light reflected from the mirror.

PHOTOELECTRIC PHONOGRAPH PICKUP.

Phonograph reproducing device consisting essentially of a light source, a jewel stylus to which is attached a very thin mirror, and a selenium cell that picks up light reflected from the mirror. Sidewise movements of the stylus in a record groove cause the amount of reflected light to vary, and the resistance of the selenium cell varies accordingly. The light source is fed by a radio-frequency oscillator rather than from the power line, to eliminate 60-cycle flicker from the light beam.

PHOTOELECTRIC PHOTOMETER.

Photometer in which is incorporated a phototube or photoelectric cell for measurements of light.

PHOTOELECTRIC PYROMETER.

Instrument for measuring high temperatures by measuring the intensity of the light given off by the heated object.

PHOTOELECTRIC RECORDER.

Recording instrument employing a light source and phototube in an optical follow-up system for the basic measuring element.

PHOTOELECTRIC SCANNER.

Light source, lens system, and one or more phototubes in a single, compact housing which can be mounted a few inches above a moving surface and used to actuate control equipment when changes occur in the amount of light reflected from the surface.

PHOTOELECTRIC SCLEROSCOPE.

Scleroscope (instrument for measuring hardness of metals by dropping a small, standard object from a fixed height and measuring the rebound) in which a phototube-light beam system is used for automatic checking of rebound height.

PHOTOELECTRIC SENSITIVITY.

Rate at which electrons are emitted from a metal per unit radiant flux of any given frequency. (Reference: PHOTOELECTRIC YIELD.)

PHOTOELECTRIC SORTER.

Industrial electronic control employing a light beam, phototube, and amplifier to sort objects according to color, size, shape, or other characteristics.

PHOTOELECTRIC SYSTEM.

In protective signaling, a photoelectric system is an assemblage of apparatus designed to project a beam of invisible light onto a photoelectric cell and to produce an alarm condition in the protection circuit when the beam is interrupted.

PHOTOELECTRIC THRESHOLD.

Quantum energy just sufficient to release photoelectrons from a given surface. The corresponding frequency is the critical or threshold frequency.

PHOTOELECTRIC TIMER.

Electronic instrument that automatically turns off an X-ray machine when the film has reached the correct exposure.

PHOTOELECTRIC TUBE.

Vacuum tube in which electron emission results from light energy striking a light-sensitive area.

PHOTOELECTRIC WORK FUNCTION.

Energy required to transfer electrons from a given metal to a vacuum or other adjacent medium

during photoelectric emission. It is sometimes expressed as energy in ergs or joules per unit of emitted charge and sometimes as energy per electron in electron volts.

PHOTOELECTRIC YIELD.

Rate at which electrons are emitted from a metal per unit radiant flux of any given frequency. (Reference: PHOTOELECTRIC SENSITIVITY.)

PHOTOELECTRICITY.

Electricity derived from the action of light.

PHOTOELECTROMOTIVE FORCE.

Electromotive force caused by photovoltaic action.

PHOTOELECTRON.

Electron emitted from a material under the influence of light.

PHOTOEMISSIVE TUBE.

Phototube.

PHOTOFLOOD LAMP.

Incandescent lamp using excess voltage to give brilliant illumination for television and photographic purposes. It has a life of only a few hours.

PHOTOGLOW TUBE.

Gas-filled phototube, used as a relay by making the operating voltage sufficiently high so that ionization and a glow discharge occur, with considerable current flow, when a certain illumination is reached.

PHOTOgoniometer.

Apparatus for studying X-ray spectra and X-ray diffraction effects in crystals.

PHOTOGRAPHIC RECORDING.

Recording produced by exposure of the record sheet to light from the recording lamp. Normal photographic developing and fixing techniques are used.

PHOTOIONIZATION.

Ionization occurring in a gas as a result of visible light or ultraviolet radiation.

PHOTOISLAND GRID.

Photosensitive surface in the storage-type, Farnsworth dissector tube for television cameras. It comprises a thin sheet of metal having fine perforations (about 400 holes per square inch).

PHOTOLUMINESCENCE.

Luminescence simulated by visible light or ultraviolet radiation.

PHOTOMAGNETIC EFFECT.

Direct effect of light on the magnetic susceptibility of certain substances.

PHOTOMETER.

Instrument for measuring the intensity of a light source or the amount of illumination, usually by comparison with a standard light source.

PHOTON.

1. Energy quantum of visible light or any other electromagnetic radiation.
2. Amount of radiant energy which occupies a small volume and moves as a whole in one direction with the velocity of light.
3. Minute particles which form streams to become light rays. These streams theoretically may be harnessed to power a space ship.

PHOTON ROCKET.

Hypothetical reaction-type powerplant based on directional emission of photons; a continuous quantum of radiant energy moving with the velocity of light. The photon rocket is considered a possible power source for interstellar space flight.

PHOTONEGATIVE.

Having a negative photoconductivity, hence, decreasing in conductivity (increasing in resistance) under the action of light. Selenium sometimes exhibits this property.

PHOTONEUTRON.

Neutron emitted as a result of disintegration due to light.

PHOTOPHORESIS.

Effect wherein very small particles (of the order

of one micron in diameter) suspended in air can be moved by an intense beam of light. The movement can be either toward or away from the light source.

PHOTOPOSITIVE.

Having a positive photoconductivity, hence, increasing in conductivity (decreasing in resistance) under the action of light. Selenium ordinarily has this property.

PHOTOSENSITIVE.

Capable of emitting electrons when illuminated by light rays.

PHOTOSPHERE.

Visible surface of the sun.

PHOTOTELEGRAPHY.

Transmission of photographs or other single images over a radio or wire communication system by scanning the picture into elemental areas in orderly sequence, converting each area into a proportional electric signal, transmitting the signals in sequence, and reassembling them in correct order at the receiver. (Reference: FACSIMILE, TELEPHOTO.)

PHOTOTIMER.

Photoelectric timer, used to turn off an X-ray machine automatically when the film has been correctly exposed.

PHOTOTUBE.

Electron tube in which variations in applied light cause corresponding variations in electron emission. It translates these changes into variations in voltage or current which may be used to control the operation of mechanisms such as automatic door openers, alarms, etc.

There are three general classifications of phototubes:

1. Photoconductive. In a photoconductive tube, the resistance or impedance changes with variation of brightness of the light falling on the light-sensitive surface.

2. Photoemissive. In the photoemissive tube, an electron space current is generated which is proportional to the light falling on the light-sensitive surface.

3. Photovoltaic. In a photovoltaic tube, a voltage is produced between two plates, usually of a semiconductor. This potential is proportional to the amount of light falling upon the light-sensitive surface.

PHOTOTUBE BRIDGE CIRCUIT.

Circuit which uses a phototube as one arm of a bridge circuit. With this type of circuit, a balanced condition (no signal output) can be reached under either black signal or white signal conditions, depending upon the impedance adjustments in the other arms of the bridge.

PHOTOTUBE RELAY.

Electrical relay which operates mechanical devices, such as counters and safety controls, by the action of a beam of light on a phototube.

PHOTOVOLTAIC.

Capable of generating a voltage as a result of exposure to visible or other radiation.

PHOTOVOLTAIC CELL.

Light-sensitive cell, capable of generating a voltage when exposed to visible or other radiation. Examples are the photronic cell and the blocking-layer of barrier-layer cell.

PHOTOX CELL.

Type of photovoltaic cell in which a voltage is generated between a copper base and a film of cuprous oxide during exposure to visible or other radiation.

PHOTRONIC CELL.

Type of photovoltaic cell in which a voltage is generated in a layer of selenium during exposure to visible or other radiation.

PHYSICAL.

Metallic, two-wire circuit.

PHYSICAL COMPROMISE.

Availability of material to unauthorized persons through loss, theft, capture, recovery by salvage, defections of individuals, unauthorized viewing, or any other physical means.

PHYSICAL SECURITY.

Component of communications security which

results from all measures necessary to safeguard classified communication equipment and material from access thereto by unauthorized persons.

PI.

Greek letter π used to designate the value 3.1416 which is approximately the ratio of the circumference of a circle to its diameter.

PI (PHILIPPINE ISLANDS, PERSONNEL IDENTIFICATION).

PI NETWORK.

Network of three impedances, two across the line and the third inserted in one line between the first two. Connected in a manner resembling the Greek letter π .

PICK-UP CONTROLLER.

In radar air traffic control systems, the surveillance radar controller who first contacts and identifies new arrivals and advises them of current airport operations in use.

PICK-UP VOLTAGE OR CURRENT.

Pick-up voltage or current of a magnetically operated device is the voltage or current at which the device starts to operate.

PICKET SHIP.

U. S. Navy ships manned and operated as operational units of the Continental Air Defense Command; picket ships extend the seaward air surveillance coverage.

PICKING UP.

Process of transferring a wave from a waveguide to a coaxial cable or a pair of conductors. It is the converse of the process of launching a wave into a guide.

PICKUP.

1. Device that converts a sound, scene or other form of intelligence into corresponding electric signals.

2. Minimum current, voltage, power, or other value at which a relay will complete its intended function.

3. Interference from a nearby circuit or system.

4. Sensing instrument to measure such variables as temperature, air pressure, and velocity during flight in astronautics.

PICTORIAL WIRING DIAGRAM.

Wiring diagram containing actual sketches of radio parts and showing clearly all connections between the parts.

PICTURE BLACK.

Signal at any point in a facsimile system produced by the scanning of a selected area of subject copy having maximum density.

PICTURE ELEMENT.

1. That portion, in facsimile, of the subject copy which is seen by the scanner at any instant. (Reference: SCANNING SPOT, ELEMENTAL AREA.)

2. Any segment of a scanning line, the dimension of which, along the line, is exactly equal to the nominal line width.

PICTURE FREQUENCY.

Number of complete pictures that are scanned per second in a television system. It has been standardized at 24 per second in the U. S.

PICTURE RECEIVER.

Receiver for television pictures only, having no facilities for receiving the associated sound.

PICTURE RECEIVER WITH SOUND CONVERTER.

Receiver for television pictures, having also an incomplete sound channel that requires the use of a suitable auxiliary sound receiver.

PICTURE SIGNAL.

Electrical impulses resulting from orderly scanning of successive elemental areas of a picture or scene by a television camera.

PICTURE TRANSMISSION.

Electric transmission of a picture having a gradation of shade values.

PICTURE TUBE.

Image-reproducing tube in a television receiver.

PICTURE WHITE.

Signal at any point in a facsimile system produced by the scanning of a selected area of subject copy having minimum density.

PIE WINDING.

Method of constructing coils from a number of individual washer-shaped coils called pies.

PIERCE OSCILLATOR.

Oscillator in which a piezoelectric crystal unit is connected between the grid and the plate of an electron tube, in what is basically a Colpitts oscillator with voltage division provided by the grid-cathode and plate-cathode capacitances of the circuit.

PIEZODIELECTRIC.

Pertaining to a change in dielectric constant as a result of mechanical stress.

PIEZOELECTRIC.

1. Having the ability to generate a voltage when mechanical force is applied, or having the converse ability to produce a mechanical force when a voltage is applied.
2. Characterized by the property of becoming electrically polarized.

PIEZOELECTRIC AXIS.

One of the directions in a crystal in which either tension or compression will cause it to develop piezoelectric charges.

PIEZOELECTRIC CRYSTAL.

Piece of natural quartz or other material capable of demonstrating piezoelectric effect. A quartz crystal can be ground to dimensions such that it will vibrate naturally at a desired radio frequency when placed in an electric circuit of appropriate components.

PIEZOELECTRIC CRYSTAL ELEMENT.

Piece of piezoelectric material cut and finished to a specified geometrical shape and orientation with respect to the crystallographic axes of the material.

PIEZOELECTRIC CRYSTAL PLATE.

Piece of piezoelectric material cut and finished to specified dimensions and orientation with respect to the crystallographic axes of the material, and having two major surfaces which are essentially parallel.

PIEZOELECTRIC CRYSTAL UNIT.

Complete assembly, comprising a piezoelectric crystal element mounted, housed, and adjusted to the desired frequency, with means provided for connecting it in an electric circuit. Such a device is commonly employed for purposes of frequency control, frequency measurement, electric wave filtering, or interconversion of electric waves and elastic waves.

PIEZOELECTRIC EFFECT.

1. That property of certain natural and synthetic crystals by which they are mechanically deformed under the influence of an electric field. Advantage of this effect is taken in the design of high-precision oscillators and in certain high-frequency filters.
2. Effect of producing a voltage by placing a stress, either by compression and expansion, or by twisting, on a crystal; and conversely, producing a stress in a crystal by applying a voltage to it.

PIEZOELECTRIC LOUDSPEAKER.

Loudspeaker in which the mechanical forces are obtained by the use of a piezoelectric element.

PIEZOELECTRIC MICROPHONE.

Crystal microphone.

PIEZOELECTRIC OSCILLATOR.

Crystal oscillator circuit in which the frequency is controlled by a quartz crystal.

PIEZOELECTRIC PICKUP.

Crystal-type phonograph pickup, the electric output of which is generated by the deformation of a piezoelectric element.

PIEZOELECTRIC PRESSURE GAGE.

Apparatus for measuring or recording very high pressures, by applying the pressure to quartz disks or other piezoelectric crystals and measuring the resulting voltage or recording it with an oscillograph after appropriate amplification.

PIEZOELECTRIC RESONATOR.

Piezoelectric crystal set up in a circuit so that it may be used as a frequency standard.

PIEZOID.

Finished crystal product after the completion of all processes. This may include electrodes adherent to the crystal blank. (Reference: FINISHED BLANK.)

PIF (PILOTS INFORMATION FILE).

Group of related publications prepared and maintained primarily for the use of pilots, consisting of applicable base flying regulations and Air Force regulations pertaining to flying safety and flying airborne equipment, to technical order manuals, and to other pertinent directives and publications.

PIGTAIL.

Flexible metallic conductor, frequently stranded, attached to a terminal of a circuit component, and used for connection into the circuit.

PIGTAIL SPLICE.

Splice made by tightly twisting the bared ends of parallel conductors.

PIKE.

Pole, fitted with a gaff at one end, used in erecting poles by manpower.

PILASTER.

Rectangular pillar engaged in a wall.

PILING RAIL.

Support in the bottom of a panel on which jack strips are laid or piled.

PILL TRANSFORMER.

Impedance matching device for coaxial transmission line, consisting of a quarter wave length of enlarged center conductor which can be adjusted longitudinally.

PILL-BOX ANTENNA.

Cylindrical parabolic reflector enclosed by two plates perpendicular to the cylinder, so spaced as to permit the propagation of only one mode in the desired direction of polarization. It is fed on the focal line.

PILOT.

1. Pilot, in a transmission system, is a signal wave, usually a single frequency, transmitted

over the system to indicate or control its characteristics.

2. Individual who directs a wire or pole line layout crew.

3. Instructions, in tape relay, appearing in line, one relative to the transmission or handling of that message.

PILOT ASSIST.

Pilot assist sub-system for the F-102/GAR-1.

PILOT CELL.

Selected cell of a storage battery whose temperature, voltage, and specific gravity are assumed to indicate the condition of the entire battery.

PILOT CHANNEL.

Narrow-band channel employed to operate trouble alarms or automatic level regulators.

PILOT CONTACT.

Control bank contact (terminal) of the pilot trunk of a PBX group. (Reference: PILOT TERMINAL.)

PILOT DIRECTION INDICATOR.

Meter that indicates to the pilot the direction and amount of change in heading that should be applied at any one time.

PILOT LAMP.

Switchboard lamp used in telephone switching which indicates a group of line lamps, one of which is illuminated.

PILOT LIGHT.

Signal to call attention to some condition in one of several bays or panels of apparatus.

PILOT NUMBER.

Number of the first, or pilot, trunk of a PBX group.

PILOT REGULATOR.

Device for maintaining the carrier-derived circuit constant under varying attenuation conditions on the transmission line.

PILOT TERMINAL.

Control bank contact (terminal) of the pilot trunk of a PBX group. (Reference: PILOT CONTACT.)

PILOT TRUNK.

First trunk (line) of a PBX group of trunks. The trunk which represents the entire PBX group.

PILOT WIRE REGULATOR.

Automatic device for controlling gains on transmission circuits to compensate for transmission changes caused by temperature variations.

PILOT-TO-FORECASTER SERVICE.

Service giving the pilot a direct radio circuit to the weather forecaster for the purpose of obtaining weather information not provided in normal reports.

PILOTAGE.

Process of directing the movements of an aircraft or ship by reference to recognizable land marks or soundings. Observations may be performed by optical, aural, mechanical, or electronic means.

PILOTCHANNEL, PILOT FREQUENCY.

Pilotchannel in a communication system is employed either to operate trouble alarms or automatic level regulators, or both. The channel may use a signal frequency or a typical circuit in the system.

PIN.

Inertial navigator for parasite aircraft.

CROSSARM. Metal or wooden peg in a cross-arm to hold an open wire insulator.

TRANSPORTATION. Pin mounted on a bracket to permit the turnover of open wires to make a transposition or change in position.

PIN CONNECTIONS.

Connections made to the terminal pins at the base of a vacuum tube.

PIN JACK.

Jack having an opening for the insertion of a plug.

PIN POSITION.

Location of the insulator pin upon the crossarm of an open-wire pole. The pin position is counted from left to right, facing the higher numbered pole.

PIN POSITION NUMBERING.

In pole line construction, pins are numbered from left to right, from top to bottom, facing the higher numbered pole.

PINE-TREE ARRAY.

Array of dipole antennas aligned in a vertical plane known as the radiating curtain, behind which is a parallel array of dipole antennas forming a reflecting curtain.

PINETREE.

Control and warning radar chain extending across the northern points of Ontario, Quebec, and Labrador. It is known as the pinetree chain. The chain is operated by Canada and the United States. The total cost of this radar line is about \$300,000,000. The pinetree chain is used not only to detect enemy aircraft, but also to control fighters engaged in interception operations.

PINHOLE DETECTOR.

Photoelectric device that detects extremely small holes and other defects in moving sheets of material and often also actuates sorting equipment that automatically rejects defective sheets.

PIP.

Figure represented on the oscilloscope of a radar caused by the echo from an aircraft or other reflecting object. (Reference: BLIP BREAK.)

PIPED PROGRAM.

Program that has been transmitted over telephone wires, usually from one studio to another.

PIPELINE.

Long metal tube having at its center a conductor supported by insulators. It is used as a transmission line for radio or television signals. (Reference: COAXIAL CABLE, COAXIAL LINE, CONCENTRIC LINE.)

PIPELINE TIME.

Number of days which elapse between the time stock is requisitioned and received.

PISTON.

In high-frequency communication practice, a piston is a conducting plate movable along the inside of an inclosed transmission path and acting as a short circuit for high-frequency currents.

PITCH.

1. Rotation of the longitudinal, or tail-to-nose, axis of an aircraft about its lateral, or wing-to-wing-axis.
2. That attribute of auditory sensation in terms of which sounds may be ordered on a scale extending from low to high, such as a musical scale.

PITCH BALL.

Small ball cut from the light and spongy dried inner tissue of certain plant stalks. Used in physics experiments because of its lightness and ability to store electric charges.

PITH-BALL ELECTROSCOPE.

Arrangement of two small pith balls suspended by silk threads. They show the presence of a charge in a neighboring object by moving apart due to mutual repulsion of the charges induced in them.

P.L. (PUBLIC LAW).

PL.

ITU designation for radio positioning land station.

PLACE.

In positional notation, a position corresponding to a given power of the base. A digit located in any particular place is a coefficient of a corresponding power of the base.

PLAIN CONDUCTOR.

Conductor consisting of one metal.

PLAIN DRESS.

Type of message in which the originator and addressees designations are indicated externally of the text.

PLAIN LANGUAGE.

Text or language which conveys an intelligible meaning in the language in which it is written, with no hidden meaning; the intelligible text underlying a cryptogram.

PLAN REPEATER INDICATOR.

Remote indicator.

PLAN 51.

Semi-automatic teletype communications system which is furnished to the Air Force on lease by Western Union. It is the ConUS portion of the global Air Force command and administration communications network.

PLAN 62.

Integrated network of commercial telephone facilities which are leased by the Government to provide an efficient and expeditious means of passing messages pertaining to, and necessary for, the movement of military air traffic. (Reference: MILITARY FLIGHT SERVICE INTERPHONE COMMUNICATIONS SYSTEM.)

PLAN-POSITION INDICATOR.

Cathode-ray tube in which the time base originates in the center and extends to the outer edge. A target's range and azimuth is determined by polar-grid coordinates.

PLANCK'S CONSTANT.

Constant h appearing in many physical formulas, having the dimension of action (energy \times time) and having a numerical value of 6.547×10^{-27} erg-second. It represents the ratio of the energy of any radiation quantum to its frequency, and was first recognized by the German physicist M. Planck in 1900.

PLANE.

Surface which has no curvature; a flat surface.

PLANE EARTH.

Earth that is considered to be a plane surface as used in ground-wave calculations.

PLANE OF A LOOP.

Imaginary plane infinite in extent, which passes through the center of a loop and is parallel to the loop wires.

PLANE OF POLARIZATION.

1. Plane containing the electric vector and the direction of propagation.
2. Plane in which polarized light vibrates.

PLANE POLAR COORDINATES.

System of polar coordinates in which the points all lie in one plane.

PLANE POLARIZED WAVE

Wave whose electric intensity at all times lies in a fixed plane which is parallel to the direction of propagation.

PLANE WAVE.

Wave in which the wave front is a plane surface. May also be defined as a wave whose equiphase surfaces form a family of parallel planes.

PLANE-EARTH ATTENUATION

Attenuation over an imperfectly conducting plane earth in excess of that over a perfectly conducting plane.

PLANET.

Any heavenly body that shines by reflected light and orbits around the sun or other star.

PLANETARY PROBE.

Unmanned rocket fired to circle or hit a planet in space, usually transmitting data back to earth prior to contact.

PLANIMETER.

Instrument that measures the area of any closed figure around which its pointer is moved.

PLANIMETRIC MAP.

Map representing only the horizontal position of features. Sometimes called a line map.

PLANNING FACTOR.

Properly selected multiplier, used in planning to estimate the amount and type of effort involved in a contemplated operation. Planning factors are often expressed as rates, ratios, or lengths of time.

PLANT.

Equipment and line facilities installed and operated to serve the purpose of providing communications by electronic means. Physical property of the telephone company used for communication.

DISTRIBUTION. Cable and wire system used to connect a subscriber to the central office.

INSIDE. Telephone equipment located inside of the exchange building.

OUTSIDE. Pole line and underground plant as

distinguished from that in buildings.

TOLL. Plant used for toll or long distance business.

PLANT CELL.

Type of lead storage cell in which the active material is formed on the plates by electrochemical means during repeated charging and discharging.

PLASMOID.

Luminous region that appears in various shapes in highly exhausted tubes under excitation of very high frequency.

PLAT (PLATOON).**PLATE.**

1. Electron tube principal electrode to which the electron stream is attracted. (Reference: ANODE.)

2. One of the conductive electrodes in a capacitor.

3. One of the electrodes in a storage battery.

NUMBER. Numbered plate mounted on attendant's switchboard stile castings to designate line and trunk multiple appearance.

PLATE BATTERY.

Source of energy which causes current to flow in the plate circuit of a vacuum tube.

PLATE BYPASS CAPACITOR.

Capacitor connected between the plate and cathode of a vacuum tube to bypass high-frequency currents and keep them out of the load.

PLATE CHARACTERISTIC.

Graph plotted to show how the plate current of a vacuum tube is affected by changes in plate voltage.

PLATE CIRCUIT.

Complete electrical circuit connected between the plate and the cathode of an electron tube.

PLATE CONDUCTANCE.

In-phase component of the alternating plate current divided by the alternating plate voltage, all other electrode voltages being maintained constant.

PLATE CURRENT.

Electron flow from the cathode to the plate inside the vacuum tube.

PLATE DETECTION.

Operation of a vacuum-tube detector at or near plate current cutoff, so that rectification of the input signal is accomplished in the plate circuit.

PLATE DISSIPATION.

Amount of power lost as heat in the plate of a vacuum tube.

PLATE EFFICIENCY.

Output power of a vacuum tube divided by dc input power to the plate.

PLATE IMPEDANCE.

Plate voltage change divided by the resulting plate current change in a vacuum tube; all other conditions being fixed. (Reference: PLATE RESISTANCE.)

PLATE INPUT POWER.

Product of the direct plate voltage applied to the tubes in the last radio stage of a transmitter and the total direct current flowing to the plates of these tubes, measured without modulation.

PLATE KEYING.

Keying a radiotelegraph transmitter by interrupting the flow of plate current in the plate circuit.

PLATE MODULATION.

1. Modulation produced by application of modulating voltage to the plate of any tube in which the carrier is present.
2. Modulation of a class C RF amplifier by varying the plate voltage in accordance with the audio signal.

PLATE NEUTRALIZATION.

Nullifying the voltage fed back in a tube through interelectrode capacitance by applying equal and opposite voltage. A method of neutralizing an amplifier in which the necessary 180° phase shift is obtained by an inverting network in the plate circuit.

PLATE POWER INPUT.

Dc power delivered to the plate of a vacuum tube

by the source of supply. It is the product of the mean anode voltage and the mean anode current.

PLATE POWER SUPPLY.

Power source for the plate of a vacuum tube.

PLATE PULSING.

Method of modulating a transmitter, in which the plate voltage is normally low until the application of a pulse, of full plate voltage to produce oscillations.

PLATE RESISTANCE.

Resistance in ohms of the path through space between the plate and cathode of a vacuum tube.

PLATE SATURATION.

Condition in which the plate current of a vacuum tube cannot be further increased by increasing the plate voltage. (Reference: CURRENT SATURATION, VOLTAGE SATURATION.)

PLATE VOLTAGE.

Dc voltage that exists between the plate and cathode of a vacuum tube.

PLATE-CIRCUIT DETECTOR.

Detector functioning by virtue of a nonlinearity in its plate-circuit characteristic.

PLATE-LOAD IMPEDANCE.

Impedance in the plate circuit across which the output signal voltage is developed by the alternating component of the plate current.

PLATE-TO-PLATE IMPEDANCE

Load impedance as measured between the two plates in a push-pull amplifier stage.

PLATINITE.

Alloy of nickel and iron containing about 46 percent nickel and having an expansion coefficient nearly equal to that of platinum. It can be used in place of platinum for lead wires in special vacuum tubes.

PLATINOID.

Alloy of 60 percent copper, 24 percent zinc, 14 percent nickel, 2 percent tungsten, having high electrical resistance, used for resistances and thermocouples.

PLATINOTRON.

Crossed-field vacuum tube used to generate and amplify microwave energy. It resembles the magnetron but differs from the magnetron in that it has two rather than one external RF connection. Has no resonant circuit.

PLATINUM.

Heavy, almost white metal that resists the action of practically all acids and is capable of withstanding high temperatures.

PLATINUM CONTACTS.

Contacts used in devices where currents must be broken frequently, as in induction coils and electric bells. Platinum is damaged less by sparking than other metals, and hence ensures a clean contact with minimum attention.

PLAYBACK REPRODUCER.

Phonograph pickup.

PLIERS, CABLE.

Specially designed tool for opening and closing split openings in cable sheaths.

PLIERS, LAMP CAP.

Pliers with hook shaped jaws which can be used to grip and pull lamp caps.

PLIERS, LINEMAN'S.

Heavy pliers with both holding and cutting jaws.

PLIERS, LONG-NOSED.

Pliers with very long and narrow jaws for holding thin objects.

PLIODYNATRON.

Vacuum tube having an additional grid maintained at a higher voltage than the plate.

PLOT.

Display of a visual or electronic fix on an object under surveillance.

PLT (PILOT).

1. Pilot, in a transmission system, is a signal wave, usually a single frequency, transmitted over the system to indicate or control its characteristics.

2. Individual who directs a wire or pole line lay-out crew.

PLUG.

1. Removable part of a circuit connector. With its counterpart, a jack or a receptacle, it is used to connect and disconnect the electrical circuits of two pieces of apparatus.

2. Device connected to corded conductors, arranged to insert in the hole (sleeve) of a jack and to make electrical contacts with the jack springs.

3. Structure in a cable which limits or prohibits the flow of gas.

DUMMY. Plug which makes no electrical contact but which holds jack springs in an operated position or which blocks the jack from use.

OPEN. Plug designed to hold jack springs in their open position.

OUT-OF-SERVICE. Plug used to make a circuit inoperative or to appear busy.

RESISTANCE. Plug with a self contained resistance for terminating circuits or adjusting current. Often it is a 600-ohm plug.

SHORT. Plug designed to connect the springs of a jack together, or short them.

PLUG SCREWDRIVER.

Jeweler's screwdriver having a retractile pin concentric with the screwdriver blade. Used for holding and driving the small screws in telephone plugs.

PLUG-IN.

1. A communication device is termed "plug-in" when it is so designed that connections to the device may be made by inserting its terminals in a suitable socket or receptacle.

2. Act of connecting equipment into an electrical circuit by inserting a plug into a jack.

3. Term applied to a component which is inserted in a socket or connector.

PLUG-IN-COIL.

Coil wound on a form often resembling an elongated tube base, with the coil leads connected to the pins on the base. These coils can be interchanged as easily as radio tubes, and are used for changing the tuning range of a receiver or transmitter.

PLUG-IN-DEVICE.

Coil, transformer, crystal unit, or other device having terminals so arranged that all connections can be made simultaneously by inserting the device into a suitable socket.

PLUG-IN RESISTOR.

Fixed resistor having terminals arranged for plugging into a socket or jacks.

PLUGGING.

System of electric braking in which the motor connections are reversed for stopping, with a series resistance being used to keep the current at a safe value and with means for opening the circuit when the motor stops, so that it does not actually reverse.

PLUMBING.

Term employed in communication practice to designate rigid coaxial lines or waveguides and accessory equipment for radio frequency transmission.

PLUNGER.

In high frequency communication practice, a conducting plate movable along the inside of an enclosed transmission path, and acting as a short circuit for high frequency currents. (Reference: PISTON.)

PLUNGER-TYPE INSTRUMENT.

Moving-iron instrument in which the pointer is attached to a long and specially shaped piece of iron that is drawn into a coil carrying the current to be measured.

PLUTONIUM, DENATURED.

Plutonium that has been contaminated with a non-fissionable isotope of the same element so that it cannot be exploded.

PM (PERMANENT MAGNET).

Piece of hardened steel or other magnetic material that has been strongly magnetized and retains its magnetism indefinitely.

PM (PHASE MODULATION).

Angle modulation in which the angle of a sine-wave carrier is caused to depart from the carrier angle by an amount proportional to the instantaneous value of the modulating wave.

Note. Combinations of phase and frequency modulation are commonly referred to as frequency modulation.

PM (PULSE MODULATED).

PNEUMATIC LOUDSPEAKER.

Loudspeaker in which the acoustic output results from controlled variations of an air stream.

PNEUMATICS.

That branch of physics which deals with the dynamic properties of gases.

PNT (POINT).

PO.

ITU designation for radio positioning mobile station.

POCKETS.

Deteriorated spots in a pole.

POD. (PORT OF DEBARKATION).

(Reference: POE (PORT OF EMBARKATION).)

POE. (PORT OF EMBARKATION).

Installation, either in the US or overseas, comprising the harbor, docks, and related facilities, such as personnel centers, storage areas, etc., at which personnel, supplies, and equipment are loaded aboard ships for movement overseas.

POINT.

1. Positional notation character, or location of an implied symbol, which separates the integral part of a numerical expression from its fractional part. For example, it is called the binary point in Binary notation, and the decimal point in decimal notation. If the location of the point is assumed to remain fixed with respect to one end of the numerical expressions, a fixed-point system is being used. If the location of the point does not

remain fixed with respect to one end of the numerical expressions, but is regularly recalculated, then a floating-point system is being used.

2. The term for a circuit termination in step-by-step equipment. (Reference: BINARY POINT.)
Note. A fixed-point system usually locates the point by some convention, while a floating-point system usually locates the point by expressing a power of the base.

SINGING. Total gain of the circuit which will just produce singing, expressed in db. condition where singing just occurs. (Reference: SINGING.)

POINT EFFECT.

Fact that a discharge will occur more readily at sharp points than elsewhere on an object or electrode.

POINT LIGHT.

Luminous signal appearing without perceptible length.

POINT OF COMMUNICATION.

Specific location to which a radio station is authorized to communicate for the transmission of public correspondence.

POINT SOURCE.

Light source whose dimensions are small compared with the distance from which it is viewed.

POINT TARGET.

Target which is a particular object or structure requiring the accurate placement of bombs.

POINT TRANSPOSITION.

Transposition, usually in an open-wire line, which is executed within a distance comparable to the wire separation, without material distortion of the normal wire configuration outside this distance.

POINT-TO-POINT COMMUNICATION.

Radio communication between two definite fixed stations.

POINT-TO-POINT TELEGRAPH STATION.

Fixed station authorized for radiotelegraph communication.

POINT-TO-POINT TELEPHONE STATION.

Fixed station authorized for radiotelephone communication.

POINTER.

Needle-shaped rod that moves over the scale of a meter.

POL (PETROL, OIL AND LUBRICANTS).

Broad term which includes all petroleum products used by the armed forces.

POLAR.

1. Pertaining to, measured from, or having a pole, such as the poles of the earth, of a magnet.
2. System of telegraphy in which the current in the line is reversed in polarity in changing from marking to spacing.

POLAR COORDINATES.

System of coordinates in which a point is located by its distance from a fixed point and the angle that the line from this fixed point to the given point makes with a fixed reference line called the polar axis.

POLAR DIAGRAM.

Diagram employing polar coordinates to show the magnitude of a quantity in some or all directions from a point.

POLAR DIRECT-CURRENT TELEGRAPH SYSTEM.

Telegraph system employing positive and negative currents for transmission of signals over the line.

POLAR GRID.

Type of circular grid wherein range and azimuth are represented from a central reference point.

POLAR OPERATION.

System whereby marking signals are formed by current impulses of one polarity and spacing signals by current impulses of equal magnitude but opposite polarity.

POLAR RADIATION PATTERN.

1. Diagram showing the relative strength of the radiation from an antenna in all directions in a given plane.

2. Diagram showing the strength of sound waves radiated from a loudspeaker in various directions in a given plane, or a similar response pattern for a microphone.

POLAR RELAY.

Relay containing a permanent magnet that centers the armature. The direction of movement of the armature is governed by the direction of current flow.

POLARENTIAL TELEGRAPH SYSTEM.

Dc telegraph system employing polar transmission in one direction and a form of differential duplex transmission in the other direction.

Note. Two kinds of polarential systems, known as types A and B, are in use. In half-duplex operation of a type A polarential system, the dc balance is independent of a line resistance. In half-duplex operation of a type B polarential system, the dc balance is substantially independent of the line leakage.

POLARIMETER.

Instrument for measuring the optical properties of a liquid.

POLARISCOPE.

Instrument for examining the state of polarization of light or other radiation and for studying polarizing properties of various materials and devices.

POLARITY.

1. Condition in an electrical circuit by which the direction of the flow of current can be determined. Usually applied to batteries and other direct voltage sources.
2. Two opposite charges, one positive and one negative.
3. Quality of having two opposite magnetic poles, one north and the other south.
4. Polarity of a television picture signal is the sense of the potential of a portion of the signal representing a dark area of a scene relative to the potential of a portion of the signal representing a light area. Polarity is stated as black negative or black positive.

POLARITY INDICATOR.

Instrument used to identify the positive and negative terminals in a dc circuit.

POLARITY WIRING.

Method of wiring buildings, in which a white wire is always used for the ground side of each branch circuit.

POLARIZATION.

1. Act or process of making light or other radiation vibrate in a definite form so that the paths of the vibrations in a plane perpendicular to the ray are straight lines, circles, or ellipses, giving respectively, plane polarization, circular polarization, or elliptical polarization.
2. Increase in the resistance of an electrolytic cell due to a change in the potential of an electrode during electrolysis. In dry cells it shortens the useful life.
3. Effect produced in a dielectric when it is placed in an electric field, whereby the positive charge in each atom is slightly displaced with reference to the negative charge.
4. Magnetism orientation of molecule-size magnets in a piece of iron or other magnetic material that is placed in a magnetic field, whereby the tiny internal magnets tend to line up with the magnetic lines of force.
5. Term used in specifying the direction of the electric vector in a linearly polarized radio wave as radiated from a transmitting antenna.

POLARIZATION DIVERSITY.

Term used to designate a method of transmission and/or reception used to minimize the effects of selective fading of the horizontal and vertical components of a radio signal. It is usually accomplished through the use of separate vertically and horizontally polarized receiving antennas.

POLARIZATION DIVERSITY RECEPTION.

Form which utilizes separate vertically and horizontally polarized receiving antennas.

POLARIZATION ERRORS.

Errors in the bearings or course indicated by a

radio beacon or direction finder which are introduced by horizontally polarized components of the electric field under certain transmission conditions.

POLARIZATION IN A DIELECTRIC.

Effect produced in a dielectric when it is placed in an electric field whereby the positive charge in each atom is slightly displaced with reference to the negative charge.

POLARIZE.

1. Produce poles, as by magnetizing a piece of iron.
2. Make light or other radiation vibrate in a definite form.

POLARIZED LIGHT.

Light that vibrates in only one plane.

POLARIZED PLUG.

Plug which is so constructed that it can be inserted into a jack or receptacle in only one position.

POLARIZED RECEPTACLE.

Receptacle which is so constructed that only a polarized plug can be inserted.

POLARIZED RELAY.

Relay in which the movement of the armature depends on the direction of the current in the circuit controlling the armature.

POLARIZED WAVE.

Wave in which the electric lines are parallel. If the electric field is vertical, the waves are known as vertically polarized; if horizontal, horizontally polarized.

POLARIZER.

Substance which, when added to an electrolyte, increases the polarization.

POLARIZING ANGLE.

Angle (to the perpendicular) at which light must fall on a dielectric reflecting surface to get maximum plane polarization in the reflected light.

POLAROID.

Light-polarizing material made by depositing, on a sheet of glass or transparent celluloid, a

chemical solution that crystallizes and then has light-polarizing properties.

POLE.

1. One end of a magnet.
2. One electrode of a battery.
3. Column of wood or steel supporting overhead structures.

POLE BRACE.

Pole set at an angle and bolted to a line pole that cannot be guyed.

POLE BRACKETS.

Wooden wedges designed to be nailed to a pole and made to hold an insulator on which a wire may be tied.

POLE GROUP.

Pairs 3—4 and 5—6 as a quad of a carrier four-wire circuit.

POLE GUY.

Tension member having one end securely anchored and the other end attached to a pole or other structure, which it supports against overturning.

POLE, JOINT.

Pole used in common by two or more utility companies.

POLE LINE.

Series of poles arranged to support conductors above the surface of the ground; and the structures and conductors supported thereon.

POLE LINE CLEARANCE.

Vertical distance from the lowest point of an overhead pole-line construction to the ground; the horizontal distance from a pole line to the adjoining trees or other obstructions.

POLE PIECE.

Piece of ferromagnetic material forming one end of a magnet, and so shaped as to control the distribution of the magnetic flux in the adjacent medium.

POLE, PIKE.

Strong wooden rod with a steel spike for pushing, raising, and supporting poles in place.

POLE SHOE.

Portion of a field pole facing the armature of a rotating machine. It may be separable from the body of the pole.

POLE STEPS.

Devices attached to the side of a pole, conveniently spaced to provide a means for climbing the pole.

POLE TERMINAL.

1. End pole of a cable line.
2. Pole carrying a cable terminal.

POLE, TREATED.

Entire length of pole treated to preserve it from rotting.

POLE, VAULT.

Communications system in support of pinetree AC&W consisting of a chain of the tropospheric scatter radio stations from Papperell to Frobisher via Gander, St. Anthony, Cartwright, Hopdale, Saglek, and Cape Warwidk; capacity to be 36 voice channels.

POLE-TO-POLE GUY.

Messenger cable (and attachments) which is used to transfer a stress of load supported by one pole to another pole.

POLE-TO-STUB GUY.

Messenger cable (and attachments) which is used to transfer a load supported by a pole to the top of a guy stub pole.

POLE-TYPE TRANSFORMER.

Transformer suitable for mounting on a pole or similar structure.

POLERENTIAL TELEGRAPH SYSTEM.

Dc telegraph system employing polar transmission in one direction and a form of differential duplex transmission in the other direction.

POLICE CALLS.

Broadcasts or orders issued by police radio stations. They can be heard on some broadcast band receivers at the high-frequency end of the dial.

POLING.

Adjustment of polarity. Specifically, in wire line practice, the use of transpositions between transposition sections of open wire or between lengths

of cable to cause the residual crosstalk couplings in individual sections or lengths to oppose one another.

POLYETHYLENE.

Polymerized ethylene (C_2H_4). A tough, white plastic insulator with low moisture absorption.

POLYPHASE.

Having or utilizing several phases. Thus, a polyphase motor operates from a power line having several different phases of alternating current.

POLYPHASE CIRCUIT.

Group of ac circuits (usually interconnected) which enter (or leave) a delimited region at more than two points of entry and which are intended to be so energized that in the steady state the alternating current through the points of entry and the alternating potential differences between them all have exactly equal periods but have differences in phase and may have differences in wave form.

POLYPHASE MOTOR.

Motor designed for operation from a polyphase input.

POLYPHASE SYNCHRONOUS GENERATOR.

Generator whose ac circuits are so arranged that two or more symmetrical alternating electromotive forces with definite phase relationships are produced at its terminals.

POLYPHASE TRANSFORMER.

Transformer designed for use in polyphase circuits.

POLYROD ANTENNA.

Dielectric rod used as an antenna. Usually excited by a waveguide.

POLYSTYRENE.

Plastic insulating material most useful at ultra-high frequencies.

POM (PREPARATION FOR OVERSEAS MOVEMENT).

Act or procedure of making a unit or units ready for shipment overseas.

PONY CIRCUIT.

Local on-base circuit not having direct entry into a relay network.

POOR.

Tracking-merit evaluation associated by the computer with a track which the automatic-tracking function is tracking with considerable difficulty.

POOR GROUND.

Ground having a dielectric constant of 5 and conductivity of 10-3 in MKS units.

POPI. (POST OFFICE POSITION INDICATOR).

Long-distance, continuous-wave LF navigational system of the phase comparison type, providing bearing information. In this system, phase difference provides bearing information and is measured between sequential transmissions on a single frequency. This system was developed by the British Post Office, hence the nickname.

PORCELAIN.

Material made from clay, quartz, and feldspar and used as an electrical insulator.

PORTABLE RECEIVER.

Relatively compact and lightweight radio receiver that is completely self-contained.

PORTABLE RECORDER.

Sound recorder built into a carrying case and designed for portable operation.

PORTABLE STANDARD WATT-HOUR METER.

Portable watt-hour meter usually provided with several current and voltage ranges and with dials indicating revolutions and fractions of a revolution of the rotating element, thus enabling an accurate comparison to be made between the standard and the meter under test.

PORTABLE TRANSMITTER.

Transmitter which can be carried on a person and may or may not be operated while in motion.

POSITION.

1. Location of an object as related to a reference point.

2. Area of a switchboard or test board arranged to be operated by one person.

3. Designated area in which one person performs a task in connection with the operation of a C-E system, station, or equipment.

POSITION LINE DETERMINATION.

Determination of a position line by radiolocation.

POSITION REPORT.

Radio message, in a specified form, containing relevant items of information on the position and progress of a vessel or an aircraft.

POSITION TYPE TELEMETER.

Telemeter which employs the relative phase position between, or the magnitude relation of, two or more electrical quantities, as the translating means.

POSITIONAL NOTATION.

One of the schemes for representing numbers, characterized by the arrangement of digits in sequence, with the understanding that successive digits are to be interpreted as coefficients of successive powers of an integer called the base of the number system. In the binary number system, the successive digits are interpreted as coefficients of the successive powers of the base two just as in the decimal number system they relate to successive powers of the base ten. In the ordinary number systems, each digit is a character which stands for zero or for a positive integer smaller than the base. The names of the number systems with bases from 2 to 20 are: Binary, ternary, quaternary, quinary, senary, septenary, octonary, (also octal), novenary, decimal, undecimal, duodecimal, terdenary, quaterdenary, quindenary, sexadecimal (also hexadecimal), septendecimal, octodenary, novendenary, and vice-nary. The sexagenary number system has the base 60. The commonly used alternative of saying "base-2," "base-4," etc., in place of tenary, quaternary, etc., has the advantage of uniformity and clarity.

POSITIVE.

1. At a higher potential than another point.

2. Point to which electrons are attracted is said to be positive.

POSITIVE BIAS.

Condition in which the control grid of a vacuum tube is positive with respect to the cathode.

POSITIVE CHARGE.

Condition existing in a body having fewer electrons than normal.

POSITIVE COLUMN.

Luminous region, often striated, in a discharge tube between the Faraday dark space and the anode.

POSITIVE CONDUCTOR.

Conductor connected to the positive terminal of a source of supply.

POSITIVE ELECTRICITY.

That kind of electricity which predominates in a body composed of glass after it has been electrified by rubbing with silk.

POSITIVE ELECTRODE.

Body of conducting material that serves at the anode in a primary cell when the cell is discharging. It is connected to the positive terminal of the cell. Electrons flow through the external circuit to the positive electrode.

POSITIVE ELECTRON.

Another name for the positron, which is like the electron except for having a unit positive charge.

POSITIVE FEEDBACK.

Process by which a part of the power in the output circuit of an amplifying device reacts upon the input circuit in such a manner as to reinforce the initial power, thereby increasing the amplification. (Reference: REGENERATION.)

POSITIVE GRID.

Grid whose potential is positive with respect to the cathode in a vacuum tube.

POSITIVE LENS.

Lens that will converge parallel light.

POSITIVE LIGHT MODULATION.

Positive light modulation occurs when an in-

crease in initial light intensity causes an increase in the transmitted power.

POSITIVE MODULATION.

Form of television modulation in which an increase in brightness corresponds to an increase in transmitted power.

POWER MODULATION FACTOR.

Ratio of the maximum positive departure of the envelope of an amplitude-modulation wave from its average value to its average value. This rating is used when the modulating signal wave has unequal positive and negative peaks.

POSITIVE PHASE-SEQUENCE RELAY.

Relay which functions in conformance with the positive phase-sequence component of the current, voltage, or power of the circuit.

POSITIVE PICTURE PHASE.

Condition in which increases in brilliancy of the positive scene or picture being televised makes the picture signal voltage increase in a positive direction above the zero level.

POSITIVE PLATE.

Grid of lead that is filled with active material and is connected to the positive terminal of a storage battery. Electrons flow toward it through the external circuit when the battery is discharging.

POSITIVE RAYS.

Streams of positive ions which are started in motion in an evacuated tube in a direction from the anode to the cathode.

Note. These rays are commonly observed in space beyond the cathode after passing through openings or canals in the electrode. (Reference: CANAL RAYS.)

POSITIVE TEMPERATURE COEFFICIENT.

Characteristic in which the resistance of a substance increases when temperature increases.

POSITIVE TERMINAL.

Terminal of a battery or other voltage source toward which electrons flow through the external circuit from the negative terminal.

POSITIVE TRANSMISSION.

Transmission of television signals in such a way that an increase in initial light intensity causes an increase in the transmitted power.

POSTIVE-GRID MULTIVIBRATOR.

Type of multivibrator which has one or more grids connected to the plate voltage supply, usually through large resistance.

POSITIVE-ION EMISSION.

Thermionic emission of positive particles that are ions of the metal used as the cathode of a vacuum tube or are due to some impurity in the cathode.

POSITIVE-ION SHEATH.

Collection of positive ions on the control grid of a gas-filled triode tube. If a sufficiently high negative bias is applied to the grid, this positive sheath blocks plate-current flow.

POSITIVE-RAY ANALYSIS.

Separation by atoms and measurement of their masses by subjecting positive ions to the deflecting effects of electric or magnetic fields.

POSITIVE-RAY CURRENT.

Current in a rarefied gas, comprising the movement of positively charged particles. (Reference: ANODE-RAY CURRENT.)

POSITRON.

Natural elemental quantity of positive electricity when associated with a mass of electronic magnitude.

POST, BINDING.

Screw terminal for connecting a conductor.

POST OFFICE POSITION INDICATOR SYSTEM.

Continuous-wave, LF navigation system of the phase-comparison type.

POST-ACCELERATING ELECTRODE.

Electrode provided in some types of electrostatic cathode-ray tubes which permits additional acceleration of the electron beam after it has been deflected. The advantage of this extra electrode

is that it permits greater intensity of the trace without materially reducing the deflection sensitivity of the tube. (Reference: INTENSIFIER ELECTRODE.)

POST-DEFLECTION ACCELERATING ELECTRODE.

Electrode provided in some types of electrostatic cathode-ray tubes which permits additional acceleration of the electron beam after it has been deflected. The advantage of this extra electrode is that it permits greater intensity of the trace without materially reducing the deflection sensitivity of the tube. (Reference: INTENSIFIER ELECTRODE.)

POT (POTENTIOMETER).

Variable voltage divider. A resistor that has a variable contact arm so that any portion of the potential applied between its ends may be obtained.

POT, WAX.

Container for the melted wax with which the cable forms are waxed.

POTASSIUM.

Alkali metal having photosensitive characteristics, used on the cathodes of phototubes when maximum response to blue light is desired.

POTENTIAL.

Difference in voltage between two points of a circuit; frequently one is assumed to be ground (zero potential). Generally expressed in volts.

DEIONIZATION. Potential at which ionization of the gas within a gas-filled tube ceases and conduction stops.

DROP. Difference in potential at the two ends of a resistance when a current is flowing.

IONIZATION. Potential at which ionization begins within a gas-filled tube. This potential is slightly lower than the firing, or striking, potential at which complete ionization takes place.

POTENTIAL BARRIER.

Région in which the electric potential is such

that moving electric charges attempting to pass through it encounter opposition and may be turned back.

POTENTIAL COIL.

In a measuring instrument or other device having series and shunt coils, the shunt coil is the potential coil because it is connected across the circuit and is affected by changes in voltage.

POTENTIAL DIFFERENCE.

1. Algebraic difference between the individual potentials of two points.
2. Voltage existing between two points. An example would be voltage drop across an impedance from one end to another.

POTENTIAL DIVIDER.

Voltage divider.

POTENTIAL DROP.

Difference in potential between the two ends of a resistance with a current flowing through it.

POTENTIAL ENERGY.

Potential energy of a body or of a system of bodies in a given configuration is the work required to bring the system from an arbitrarily chosen reference configuration to the given configuration without change in the kinetic energy of the system.

POTENTIAL GALVANOMETER.

Galvanometer-type instrument having such high resistance that it takes practically no current. It has been replaced by the modern electronic vacuum-tube voltmeter.

POTENTIAL GRADIENT.

Different in the values of the potential per unit length along a conductor or through a dielectric.

POTENTIAL HOLE.

Region toward which the electric potential drops abruptly. The term is common in nuclear physics.

POTENTIAL WINDING.

Winding connected across the two sides of a circuit and, hence, acted on by the circuit voltage.

POTENTIOMETER.

Variable voltage divider. A resistor that has a variable contact arm so that any portion of the potential applied between its ends may be obtained.

POTENTIOMETER CONTROL.

Control by means of a variable voltage obtained with a sliding contact on a resistance connected across part or all of a voltage source.

POTHEAD.

Insulator used in making a sealed joint between an underground cable and an overhead line.

POTIER DIAGRAM.

Vector diagram showing the voltage and current relations in an ac generator.

POTTED LINE.

Pulse forming network immersed in oil and enclosed in a metal container.

POULSEN ARC.

Dc arc between electrodes in a chamber through which hydrogen or illuminating gas is continuously passed. Extensively used for producing radio signals before the use of vacuum-tube transmitters.

POUNDAL.

Absolute English (foot-pound-second) unit of force.

POWER.

1. Rate of doing work or expending energy. In dc systems multiplying volts by amperes gives the power in watts.
2. Lens power is a measure of ability to bend or refract light.
3. When not otherwise specified, the definition of peak power of a radio transmitter is used.

AVERAGE. Average level of power supplied to the antenna over a given period of normal continuous operation.

EFFECTIVE. Product of the antenna input power in kilowatts and the antenna gain.

MEAN. Power supplied to the antenna during normal operations, averaged over a time sufficiently long compared to the period corresponding to the lowest frequency encountered in actual modulation.

MODIFIED EFFECTIVE. Equivalent transmitting antenna power used for lowest useful high-frequency problems for long-distance circuits. The modified effective power is equal to the transmitting antenna effective power (the sum of the transmitting antenna power and gain), receiving discrimination gain, and the type of service gain (with the sign reversed) when all quantities are expressed in decibels.

PEAK. Maximum transmitter power of the radar pulse. Since the resting time of a Radar transmitter is long in comparison with its operating time, the average power output is quite low in comparison with the peak power.

STANDARD TEST TONE. One milliwatt (0 dbm) at 1000 cps.

POWER AMPLIFICATION.

Process of amplifying a signal to produce a gain in power as distinguished from voltage amplification. The gain is the ratio of the alternating power output to the alternating power input of an amplifier.

POWER AMPLIFIER.

Amplifier designed to produce a gain in signal power, as distinguished from a voltage amplifier.

POWER CORD.

Flexible cable which connects equipment to a power supply.

POWER DETECTION.

That form of detection in which the power output of the detecting device is used to supply a substantial amount of power directly to a device such as a loudspeaker or recorder.

POWER DETECTOR.

Detector vacuum tube operating with plate voltage sufficiently high to allow handling of

strong input signals without appreciable distortion.

POWER DIRECTIONAL RELAY.

Relay which functions in conformance with the direction of power.

POWER FACTOR.

Ratio of the actual power of an alternating or pulsating current, as measured by a wattmeter, to the apparent power, as indicated by ammeter and voltmeter readings; the ratio of resistance to impedance, and therefore, a measure of the loss in an inductor, capacitor, or insulator; the cosine of the phase angle between the voltage applied to a load and the current passing through it (sometimes the cosine is multiplied by 100 and expressed as a percentage.)

POWER FACTOR METER.

Instrument for measuring power factor. Power factor meters are provided with a scale, usually graduated in percentage power factor.

POWER FACTOR REGULATOR.

Regulator which functions to maintain the power factor of a line or an apparatus at a predetermined value or to vary it according to a predetermined plan.

POWER FEEDER.

Feeder supplying principally a power or heating load.

POWER GAIN.

Ratio of the powers required to produce a field strength with a standard comparison antenna to the power required to produce the same field strength with the antenna in question. The power gain is usually expressed in decibels.

POWER GAIN OF ANTENNA.

Relative power gain of one transmitting or receiving antenna over another is the measured ratio of the signal power one produces at the receiver input terminals to that produced by the other, the transmitting power level remaining fixed.

Note. In long range communication measurements, the relative power gain is affected

by the propagation characteristics of the medium.

POWER INDUCTION.

Noise interference directly traceable to commercial power line.

POWER LANDING.

Landing of a space ship on a body in space in which the thrust of its motors is used as a brake.

POWER LEVEL.

Power level at any point in a transmission system is the ratio of the power at that point to some arbitrary amount of power chosen as a reference. This ratio is usually expressed either in decibels referred to one milliwatt, abbreviated dbm, or in decibels referred to one watt, abbreviated dbw.

POWER LINE.

Two or more wires conducting electric power from one location to another.

POWER LOSS.

Power loss of a transducer is the ratio of the signal power absorbed by its input to the signal power delivered to a specified load impedance. This ratio is usually expressed in decibels.

POWER PACK.

Apparatus which adapts the available power to the needs of vacuum-tube plate, grid, and heater circuits in receivers and transmitters.

POWER RATING.

Power available at the output terminals of a radio transmitter when these are connected to the normal load circuit or to an equivalent circuit. For an amplitude-modulation telephone transmitter, it is the power available when the carrier is being modulated to its specified modulation capability. For a continuous-wave telegraph transmitter, it is the power delivered with the key closed.

POWER RATIO.

Ratio of the power output to the power input of a device. The result is usually expressed as the number of decibel loss or gain.

POWER RELAY.

Relay that functions at a predetermined value of power. It may be an overpower relay, an underpower relay, or a combination of both.

POWER SUPPLY.

Source of electrical energy required for communication operation.

A. Source of current used to heat the filament of an electron tube.

B. Power supply that furnishes dc voltages required by the plate and screen-grid electrodes of vacuum tubes.

C. Power supply that furnishes the steady voltage required by the control-grid electrodes of vacuum tubes.

VIBRATOR. Power supply which employs a vibrator to produce the varying current necessary to actuate a step-up transformer, the output of which is then rectified and filtered.

POWER SUPPLY UNIT.

Unit for converting power from ac to dc supply into ac or dc power at voltages suitable for supplying an electronic device.

POWER SWITCH.

Main switch in a radio receiver, transmitter, or other equipment. It connects or disconnects the unit from its power line. Often called on-off switch.

POWER SWITCHBOARD.

Part of a switch gear which consists of one or more panels upon which are mounted the switching control, meter protective and regulatory equipment. The panel or panel supports may also carry the main switching and interrupting devices together with their connections.

POWER TRANSFORMER.

Transformer used to change a supply voltage to the various higher and lower values required for vacuum-tube plate, heater, and bias circuits.

POWER TUBE.

Electron tube which is designed to handle a greater amount of power than the ordinary amplifier tube.

POWER UNIT.

Apparatus which adapts the available power to the needs of vacuum-tube plate, grid, and heater circuits in receivers and transmitters.

POWER WINDING.

Of a saturable reactor, a winding to which is supplied the power to be controlled. Commonly the functions of the output and power windings are accomplished by the same winding, which is then termed the output winding.

POWER-AMPLIFIER STAGE.

1. Audio-frequency amplifier stage that is capable of handling considerable audio-frequency power without distortion.
2. Radio-frequency amplifier stage that serves primarily to increase the power of the carrier signal in a transmitter.

POWDERED IRON CORE.

Core consisting of finely divided particles of magnetic material mixed with a suitable bonding material and pressed into shape.

POYNTING'S VECTOR.

Vector product of the electric and magnetic intensities involved in Poynting's theorem.

PP (PUSH-PULL).**PPI (PLAN POSITION INDICATOR).**

Cathode-ray tube in which the time base originates in the center and extends to the outer edge. A target's range and azimuth is determined by polargrid coordinates.

PPI APPROACH.

Special type of surveillance radar approach given by the radar controller using the PPI only to assist an aircraft to the runway.

PPI DEPARTURE.

Special type of surveillance radar departure given by the radar controller to assist an aircraft in safely expediting its departure from the vicinity of an aerodrome.

PPI DRIVER.

Unit containing necessary power supply, sweep,

marker gate, and other circuits essential to the operation of a separate repeater PPI scope.

PPI INDICATOR.

Type of presentation on a radar indicator in which the signal appears as a bright spot, with range indicated by distance from the center of the screen and bearing by radial angle.

PPI REPEATER.

Unit which repeats PPI indication at a location remote from the radar console. (Reference: REMOTE PPI.)

PPI SCAN.

Type of presentation on a radar indicator where the sweep rotates in a circular manner around a center point. The signal appears as a bright spot with range indicated by distance from the center of the screen and bearing by its radial angle.

PPM (PULSE POSITION MODULATION).

Type of modulation sometimes used in telemetry where the information is contained in the positioning of information pulses with respect to reference pulses.

PPS (PULSE PER SECOND).**PR (PUERTO RICO).****PRACTICAL SYSTEM OF ELECTRICAL UNITS.**

System in which the units are the multiples or submultiples of the units of the centimeter-gram-second electromagnetic system.

PRACTICES.

Orderly set of instructions which constitute the authority for doing work in a standard manner. They list standard tools, materials, methods, and establish objectives. (Reference: SPECIFICATION.)

PRCHT (PARACHUTE).

1. Contrivance that opens out somewhat like an umbrella and catches the air so as to retard or slow down the movement of a body attached to the contrivance.
2. Mode of descent.

PRE-EMPHASIS.

Intentional alteration of the frequency-amplitude characteristic of a signal wave to reduce adverse effects, such as noise, in subsequent parts of the system, after which de-emphasis is employed.

PRE-PLUMBED SYSTEM.

Fixed, nontunable waveguides or coaxial transmission lines.

PRE-TR.

Additional TR box to provide increased attenuation of transmitted pulse to prevent damage to crystal mixer.

PRE-TRIGGER.

Trigger used to initiate sweep ahead of transmitted pulse.

PREAMBLE.

Portion of a commercial radio-telegraph message

that is sent first. It contains the prefix, message number, office of origin, word check, time filled, date, and other data not part of the original message.

PREAMPLIFIER.

Amplifier used ahead of a main amplifier.

PREARRANGED MESSAGE CODE.

Code adapted for the use of units which require special or technical vocabulary and composed almost exclusively of groups representing complete or nearly complete messages.

PRECEDENCE.

Designation assigned to a message by the originator to indicate to communication personnel the relative order of handling and to the addressees the order in which the message is to be noted.

PRECEDENCE DESIGNATIONS.

Precedence designations and definitions are as follows:

DESIGNATION	PRECEDENCE PROSIGN	DEFINITION
FLASH	Z	Reserved for initial enemy contact reports of special emergency operational combat traffic originated by specifically designated high commanders or by operational commanders of units directly affected. This traffic is to be short reports of emergency situations of vital proportion.
EMERGENCY	Y	Reserved for amplifying reports of initial/enemy contact, for messages required in situations of emergency which affect the current implementation of a tactical action and in situations which gravely affect the national security or concerning distress, which demand immediate delivery to the addressee.
OPERATIONAL IMMEDIATE	O	Reserved for important tactical messages pertaining to the operations in progress, or for important administrative messages having an immediate bearing on tactical operations; and when necessary, those messages concerning the immediate movement of ships, aircraft or ground forces. This precedence is only to be used when the value of a message is dependent upon expeditious delivery to the addressee.
PRIORITY	P	Reserved for important messages which must have precedence over routine traffic. This is the highest precedence which normally may be assigned to messages

DESIGNATION	PRECEDENCE PROSIGN	DEFINITION
ROUTINE	R	of administrative nature. Reserved for all types of messages which are not of sufficient urgency to justify a higher precedence, but must be delivered to the addressee without delay.
DEFERRED	M	To be employed for all types of messages which justify transmission by rapid means, but which will admit of the delay necessary for prior transmission of messages of high precedence.

PRECEDENCE DESIGNATIONS.

Nato telephone precedence designations and definitions are as follows:

DESIGNATION	DEFINITION
FLASH	A flash telephone call will be given priority over all other calls. The flash precedence is reserved for very important matters, such as (a) an announcement of an alert; (b) imminent or first engagement in actual combat; (c) for cases of extreme combat operational urgency when immediate connection is essential to prevent conflict between friendly elements; or (d) to make initial reports of marine, aircraft or ammunition dump disasters. Any call except another flash call on any line required to connect a flash call will be interrupted in order to complete such a flash call.
LIGHTNING	A lightning telephone call will be given priority over all other calls except flash calls. The lightning precedence is reserved for important matters such as (a) messages which will have an immediate effect on combat operations or pertaining to the conduct of land, sea, or air rescue operations, and (b) very important administrative messages dealing with logistical support which have immediate bearing on tactical operations. Any calls except flash or another lightning call or any line required to connect a lightning call will be interrupted in order to complete the lightning call.
URGENT	An urgent telephone call will be given priority over ordinary calls and is reserved for urgent matters requiring immediate action. An urgent call may not interrupt other calls already in progress. This is the highest precedence which normally may be used for calls of an administrative nature.

PRECEDENCE INDICATOR.

Device that indicates which of two or more actions comes first. The electronic version, employing thyratrons, has a high degree of accuracy.

PRECEDENCE RATING.

Rating assigned to an activity in the USAF operating program, OPU series (based on fiscal year), which prescribes the order of relative urgency or importance of all activities included in approved programs.

PRECIPITATION.

1. Removing a substance from solution by physical or chemical means.
2. Deposition of moisture from the atmosphere.

PRECIPITATION NOISE.

Noise generated in an antenna circuit, generally in the form of a relaxation oscillation, caused by the periodic discharge of the antenna or conductors in the vicinity of the antenna into the atmosphere.

PRECIPITATION STATIC.

Type of interference experienced in a receiver during snowstorms, rainstorms, and duststorms. Often caused by the impact of dust particles against the antenna or the existence of induction fields created by nearby corona discharges.

PRECIPITATOR.

Apparatus for removing small particles from air by electrostatic precipitation, as in the precipitron.

PRECIPITRON.

Electronic apparatus for removing smoke, dust, oil, mist, or other small particles from the air.

PRECISION.

1. Adapted for extremely accurate scientific measurement. It is not, however, a guarantee of accuracy (negligible error), because precision refers to the measuring instrument and does not cover external sources of error inherent in the measuring method.

2. Quality, in an electric computer, of being exactly or sharply defined or stated. A measure of the precision of a representation is the number of distinguishable alternatives from which it was selected, which is sometimes indicated by the number of significant digits it contains. (Reference: ACCURACY.)

PRECISION APPROACH RADAR.

Rapid scanning radar system which is so located on an airport that aircraft on approach to the runway served by the system are presented on radar displays in terms of linear deviation from a desired glide path and in terms of distance to go to the touchdown point on the runway. PAR control personnel talk to the pilot over conventional air-ground communication circuits giving information necessary to direct the aircraft through the low approach phase of the landing operation.

PRECISION NET.

In a four-wire terminating set or similar device employing a hybrid coil, an artificial line so designed and adjusted as to provide an accurate

balance for the loop and subscribers set or line impedance.

PRECISION PPI.

PPI which displays targets on both a five-inch PPI scope and five-inch B scope. Any area of the PPI pattern 30° in angular width and 4,000 yards long in range can be displayed on the expanded B scope. A highly accurate ranging circuit is provided to measure ranges out to 40,000 yards.

PRECISION RANGE UNIT.

Extremely accurate range unit for fire control radar.

PRECISION SWEEP.

Delayed expanded sweep for high resolution and range accuracy.

PRECONDUCTION CURRENT.

Low value of plate current flowing in a thyatron or other grid-controlled gas tube prior to the start of conduction.

PREDICTION FORMULA.

Formula which relates the brightness and persistence of a radar-indicator image to the physical properties and orientation of an urban structure group producing the image.

PREDICTOR.

Form of computer.

PREFERRED TUBE TYPES.

Vacuum tubes recommended to designers of electronic equipment for general use to minimize the number of tube types required for stock supply.

PREFIX.

Component contained in the heading of a message whose elements may include the accounting information, group count, and SVC.

PREPAID CHARGES.

Charges for telegraph message or a toll telephone call when paid by the sender or originator.

PRESELECTOR.

1. Device, placed ahead of a frequency converter

or other device, which passes signals of desired frequencies and reduces others.

2. Device in automatic switching which performs its selecting operation before seizing an idle trunk.

PRESELECTOR STAGE.

Radio-frequency amplifier stage in the preselector of a superheterodyne receiver.

PRESENTATION.

Form which the radar echo signals take on the cathode-ray tube screen, which is dependent on the nature of the sweep circuit utilized.

PRESENTATION SELECTOR.

Provided for selection of cathode-ray tube indicator display.

PRESERVATIVE.

Solution intended to increase the life of instantaneous recording disks.

PRESET GUIDANCE.

Form of missile guidance wherein the control mechanism is set, prior to launching, for a predetermined path with no provision for subsequent adjustment.

PRESSING.

Record produced in a record-molding machine from a matrix or stamper.

PRESSURE AMPLITUDE.

Maximum absolute value of the instantaneous sound pressure at a point during any given cycle, for a sinusoidal sound wave. The unit is the dyne per square centimeter. The term maximum sound pressure applies to all types of sound waves.

PRESSURE LEVEL.

Pressure level of a sound, in decibels, is 20 times the logarithm to the base 10 of the ratio of the pressure P of this sound to the reference pressure P . Unless otherwise specified, the reference pressure is understood to be 0.0002 dyne per square centimeter.

PRESSURE MICROPHONE.

Microphone in which the electrical response is

caused by variation in pressure in the activating sound wave.

PRESSURE RELAY.

Relay which functions at a predetermined pressure of gas or liquid.

PRESSURE SUIT.

Body covering worn by flyers to offset vacuum conditions of space.

PRESSURE, SUSTAINED GAS.

System of keeping cables from failing due to dampness by filling them with dry gas under pressure.

PRESSURE SYSTEM.

System in protective signaling, for protecting a vault by maintaining a predetermined differential in air pressure between the inside and outside of the vault. Equalization of pressure resulting from opening the vault or cutting through the structure initiates an alarm condition in the protection circuit.

PRESSURE WELDING.

Group of welding processes in which mechanical pressure is applied during welding to hold the parts together.

PRESSURE-TYPE CAPACITOR.

Fixed or variable capacitor mounted in a metal tank filled with nitrogen at a pressure that may be as great as 300 pounds-per-square-inch. The high pressure permits a voltage rating several times that of the air rating. Used chiefly in transmitters.

PRESSURIZATION.

Process of surrounding the critical parts of equipment which is designed for high-altitude operation with desiccated air or an inert gas under elevated pressure (about five pounds per square inch at sea level); used for the purpose of avoiding breakdowns which might result from the impairment of the insulating properties of air at reduced pressure.

PRESSURIZED COMPONENT.

Component, usually radar, filled with dry air or other gas.

PREVENTATIVE AIR-DEFENSE MEANS.

Means and activities which tend to reduce the susceptibility to damage of a community or facility as a result of air attack, or which provide for the rapid restoration and recovery therefrom.

PREVENTATIVE MAINTENANCE.

Cares and servicing by personnel for the purpose of maintaining equipment and facilities in satisfactory operating conditions by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects.

PRF. (PULSE REPETITION FREQUENCY).

Rate at which repetitive pulses of RF energy are generated.

PRIMARY.

1. Transformer winding which receives energy from a supply circuit. The secondary receives the electromagnetic induction from the primary.
2. High voltage conductors of a power distribution system.
3. First in order of importance, placement, or development.

PRIMARY AND SECONDARY WINDINGS.

Terms primary and secondary serve to distinguish the windings in regard to energy flow, the primary being that which receives the energy from the supply circuit, and the secondary that which receives the energy by electromagnetic induction from the primary.

PRIMARY BATTERY.

Battery consisting of primary cells.

PRIMARY CELL.

Cell designed to produce electric current through an electro-chemical reaction which is not efficiently reversible when discharged. The cell cannot be efficiently recharged by an electric current.

PRIMARY CIRCUIT.

First, in electrical order, of two or more coupled circuits, wherein a change in current flow will

induce a voltage in the other, or secondary, circuits.

PRIMARY COLORS.

Red, green, and blue, which can be combined to reproduce various hues. No two primaries can be mixed to form a third. Color television terminology.

PRIMARY CONTROL.

Local agency, control tower, surveillance radar, or other, who will exercise control over an aircraft within the airport control area prior to assumption of control of the aircraft by precision approach control.

PRIMARY CURRENT.

Current flowing through the primary winding or a transformer. Changes in this current cause a voltage to be induced in the secondary winding.

PRIMARY ELECTRON.

1. Electron which has the greater energy after a collision between two electrons. The other is the secondary electron.
2. Electron produced in the detection or counter tube by an ionizing event.

PRIMARY EMISSION.

Emission of electrons due to primary causes, such as heating of a cathode, and not to secondary effects, such as electron bombardment.

PRIMARY FAULT.

Initial breakdown of the insulation of a conductor, usually followed by a flow of power current.

PRIMARY FREQUENCY.

Frequency assigned for normal use on a particular circuit.

PRIMARY JACK.

Toll switching point to which a number of toll centers are connected.

PRIMARY OUTLET.

Terminates line conductors in a long-lines test-board in one direction and central office equipment in the other.

PRIMARY RADAR.

Radar using reflection only.

PRIMARY RADIATION.

Element of an antenna at which radiated energy leaves the transmission system.

PRIMARY RELAY.

Relay that produces the initial action in a sequence of operations.

PRIMARY SERVICE AREA.

Area in which the ground wave of a broadcast station is not subject to objectionable interference or fading.

PRIMARY SKIP ZONE.

Area around a transmitter beyond the ground-wave range but within the skip distance. Radio reception is possible in this zone only by sporadic and zig-zag reflections.

PRIMARY STANDARD.

Unit directly defined and established by some authority, against which all secondary standards are calibrated.

PRIMARY VOLTAGE.

Voltage applied to the terminals of the primary winding of a transformer.

PRIMARY WINDING.

Winding on the input side.

PRIME MOVER.

Engine, turbine, or other source of mechanical power used to drive an electric generator.

PRIMING ILLUMINATION.

Small, steady illumination applied to a phototube or photoelectric cell to make it more sensitive to the variations in illumination being measured.

PRINCIPAL AXIS.

Line so chosen with reference to a rigid body that the body may rotate about that line without developing a centrifugal torque in any plane containing the line.

PRINCIPAL DISTANCE.

Perpendicular distance from the internal perspective center to the plane of a particular finished negative or print. This distance is equal

to the calibrated focal length, corrected for both the enlargement or reduction ratio and the film or paper shrinkage or expansion, and maintains the same perspective angles as the internal perspective center to points on the finished negative or print, as existed in the taking camera at the moment of exposure. This is a geometrical property of each particular finished negative or print.

PRINCIPAL FOCUS.

Focus for a beam of rays parallel to the axis of a lens or mirror.

PRINCIPAL OPERATIONAL INTEREST.

When used in connection with an established facility operated by one service for joint use by two or more services, the term indicates a requirement for the greatest use of, or the greatest need for, the services of that facility. The term may be applied to a service, but is more applicable to a command.

PRINTED WIRE.

Method that reduces wiring radio circuits to a dimensional lithograph process.

PRINTER.

Printing telegraph instrument having a signal-actuated mechanism for automatically printing received messages. It may have a keyboard similar to that of a typewriter for sending messages.

PRINTER TELEGRAPH CODE.

Five- or seven-unit code used for operation of teleprinter, teletypewriter, and similar telegraph printing services.

PRINTING RECORDER.

In protecting signaling, a printing recorder is an electromechanical recording device which accepts electrical signal impulses from transmitting circuits and converts them to a printed record of signal received.

PRINTING TELEGRAPHY.

Method of manual telegraph operation in which signals are transmitted by means of a keyboard instrument and are automatically recorded by the receiving instrument in the form of printed characters.

PRIORITY.

Message precedence designation. (Reference: PRECEDENCE DESIGNATIONS.)

PRIORITY REQUISITION.

Requisition submitted for items on which an urgent delivery requirement exists or is anticipated.

PRISM.

Piece of optical glass or other transparent material, having a triangular cross section, used to reflect or refract light rays.

PRISM DIOPTR.

Unit of measure of the refracting power of a prism. One diopter is the power of a prism to deviate a ray of light by one centimeter at a distance of one meter from the prism.

PRISMATIC.

Pertaining to a prism, as the effects produced by prisms.

PRIVACY.

Equipment applied at one terminal of a circuit which scrambles the voice to the listener. At the other terminal the voice is unscrambled and made intelligible again.

PRIVACY CODE.

Code employed to protect the contents of a message from casual reading by unauthorized individuals but which does not afford (and is not intended to afford) any security against organized cryptanalysis. Primarily used by the press or communications staff.

PRIVACY SYSTEM.

In radio transmission, a privacy system is a system designed to make unauthorized reception difficult.

PRIVATE AUTOMATIC BRANCH EXCHANGE.

Private branch exchange in which connections are made by remotely controlled switches.

PRIVATE AUTOMATIC EXCHANGE.

Private telephone exchange in which connections are made by remotely controlled switches.

PRIVATE BRANCH EXCHANGE.

Telephone exchange serving a single organization and having connections to a public telephone exchange.

PRIVATE EXCHANGE.

Telephone exchange serving a single organization and having no means for connections with a public telephone exchange.

PRIVATE HOUSING.

Quarters not owned or provided by the government.

PRIVATE LINE CIRCUIT.

Communication path suitable for any selected type of communications assigned for private use. The user leases this channel from a commercial company.

PRIVATE LINE SERVICE.

Private line service is that intercity service provided by United States common carriers engaged in domestic and/or international wire, radio, and cable communications for the intercity communications purposes of a customer. This service is provided over integrated communications pathways including facilities or local channels, which are integrated components of intercity private line services, and station equipments between specified locations for a continuous period or for regularly recurring periods at stated hours.

PRIVATE OPERATING AGENCY.

Individual, company, or corporation other than a governmental establishment or agency, which operates a telecommunication installation intended for an international telecommunication service or which is capable of causing harmful interference with such a service.

PRIVATES.

Third and fourth wires in a dial system which correspond to the sleeve and lamp wires of a manual system. The supervisory leads of a dial system.

PROBABLE ERROR.

Amount of error which, according to the laws of probability, is most likely to occur during a measurement.

PROBE.

1. Resonant conductor which is placed in a waveguide or cavity resonator for the purpose of inserting or withdrawing electromagnetic energy.
2. Test lead, for use with a particular piece of test equipment, which contains within itself an active or passive network.
3. Rod placed in the slotted section of a transmission line to measure the standing wave ratio or to inject or extract a signal.

PROCEDURE MESSAGE.

Message in which the text contains only prosigns, operating signals, addressee designation, identification of messages, parts of messages, and amplifying data as necessary.

PROCEDURE SIGN.

One or more letters or characters, or combination thereof, used to facilitate communication by conveying, in a condensed standard form, certain frequently used orders, instructions, requests, and information related to communications.

PROCEDURE WORD.

Word or phrase limited to radio and telephone procedures and used in lieu of a prosign.

PROCESSING.

Term used in electronic warfare work to describe the production of electromagnetic intelligence from raw intercepted material.

PROCUREMENT.

Process of obtaining personnel, services, supplies, and equipment.

PROD, POLE.

Steel tool used for determining the degree to which a pole has rotted.

PRODUCTION MODEL.

Model in its final mechanical and electrical form, of final production design, made by production tools, jigs, fixtures, and methods.

PROFILE CHART.

Vertical cross-section drawing of a microwave path between two stations indicating terrain, obstructions, antenna height requirements, etc.

PROFILOMETER.

Instrument for measuring surface roughness.

PROFORMA.

Standard form of message, the nature of the successive elements of which is understood by prearrangement.

PROGRAM.

1. Sequence of sound or television signals transmitted for broadcasting purposes. Unless accompanied by the prefix television, or the equivalent, the term ordinarily denotes sound signals.
2. Series of sequential instructions required for a computer to perform an operation or operations. Master program: A complete direction center or combat center program enabling such units to perform the assigned air-defense mission, minus variables such as geography, weapons sources, etc. Adapted program: A master program to which local constants such as geography, weapons sources, etc., have been added.
3. Outline or projection of something to be done or carried out; more specifically a projection or phasing of inventory positions or operation rates, showing how the Air Force plans to get from current position to approved objectives.

BUDGET. Outline or schedule for the administration and expenditure of a major part or component of an appropriation. Budget programs are identified in the budget code by three-digit symbols ending in zero. The first digit indicates the appropriation and the second digit identifies the specific program.

USAF. General term used to designate the various principle or detailed program documents produced and/or revised periodically at Headquarters, USAF, to aid in attaining Air Force program and budget objectives. These programs are based on the program objectives of the Air Force, which in turn are based on current war plans. They are given both long and short titles to permit ready identifications.

USAF COMMUNICATIONS - ELECTRONICS.

One of detailed program documents produced

and/or revised periodically at Headquarters, USAF. This document lists all approved fixed communications-electronics facilities in operation or programmed for future operation. The document and its revisions constitute a periodic restatement of fixed communications-electronics requirements in support of Air Force program goals.

USAF OPERATING. Near-term program document published monthly in two volumes by the Director of Operations, Headquarters, USAF, to cover current operations. The long title of the first volume is USAF Operating Program: Priorities of Programmed Units, and the short title is OPU-()-()-(I). The second volume is USAF Operating Program: War Plan Implementation and Special Weapons Capability, OPU-()-()-(II).

PROGRAM CIRCUIT.

Telephone circuit that has been equalized to handle a wider range of frequencies than are required for ordinary speech signals, so that it can be used for transmission of musical programs over radio networks for broadcasting purposes.

PROGRAM FAILURE ALARM.

Program-operated vacuum-tube relay that gives a visual and aural alarm when the program fails on the line being monitored. A time delay is provided to prevent the relay from operating and giving a false alarm during station-identification periods or other short periods of silence in program continuity.

PROGRAM GUIDANCE.

Written statement of program objectives, assumptions, policies, and limitations, expressed in summary form, and used as a basis for preparing the USAF or MDAP program documents.

PROGRAMMED CHECK.

(Reference: CHECK PROGRAMMED.)

PROGRESSIVE SCANNING.

In television, a rectilinear scanning process in which the distance from center to center of successively scanned lines is equal to the nominal line width.

PROJ (PROJECT, PROJECTILE).

PROJECT 572.

Western electric test project which supplies the required data for the design of equipment and subsequent installation of the distant earlywarning line.

PROJECT, BUDGET.

Plan which is a significant unit or part of a budget program. Budget projects are identified in the budget code by three-digit symbols. The first two digits indicate the appropriation and budget program to which the project pertains. The third digit identifies the specific project. In some cases budget subprojects are used. They are identified by decimal suffixes to the symbols for the respective projects.

PROJECT MICHIGAN.

Joint service supported project at the Engineering Research Institute, University of Michigan. Its general mission is the conduct of research and development of systems and components for combat surveillance. It operates under the cognizance of the Chief Signal Officer, DOA.

PROJECT, PUBLIC WORKS.

Package or grouping of all related real property facilities and construction items required to provide a completely usable facility. An exception to this is land items which will always be planned as a separate project even though the land is required for a single project in the program.

PROJECTION CATHODE-RAY TUBE.

Tube designed to produce an intensely bright but relatively small image that can be projected onto a large viewing screen by an optical system consisting of lenses or a combination of lenses and mirrors.

PROJECTION PPI.

Unit in which the image of a four inch dark-trace cathode-ray tube is projected on a 24 inch horizontal plotting surface. The echoes appear as magenta-colored arcs on a white background. (Reference: SKIATRON.)

PROJECTIONIST, COMMAND POST.

Airman responsible for the operation of the command post projector and its associated film processing equipment.

PROJECTOR.

1. Device used in an underwater sound system to radiate a sound pulse in a desired direction through the water from the bottom of a ship.
2. Horn designed to project sound chiefly in one direction from a loudspeaker.

PRONE-PRESSURE METHOD.

Method of reviving a person who has received a severe electric shock. It involves placing the victim in a prone position, face downward, applying gradual pressure just below the ribs to expel air from the lungs, suddenly releasing this pressure, and repeating the process regularly at a rate slightly slower than that of normal breathing.

PROOF.

Apparatus, designated as moisture-resistant, fume resistant, etc., when so constructed, protected, or treated that its successful operation is not interfered with when subjected to the specified material or condition.

PROOF PLANE.

Small piece of conducting material mounted on an insulating handle, used to sample the charge of a body and bring this charge to an electroscope to determine its polarity.

PROP (PROPERTY).

1. Any or all objects, possessions, and interest owned by or belonging to, the Air Force.
2. Any or all Air Force supplies and equipment.

PROPAGATION.

- 1 In electrical practice, the travel of waves through or along a medium.
2. Traveling of a wave along a transmission path.
3. Travel of electromagnetic waves or sound waves through a medium. Propagation does not

refer to the flow of current in the ordinary sense.

ABNORMAL. Phenomena of unstable or changing atmospheric and/or ionospheric conditions acting upon transmitted radio waves, preventing such waves from following their normal path through space, thereby causing difficulties and disruptions of communications.

MULTIHOP. Process by which radio waves reach a distant receiving point by making two or more reflections from the ionosphere.

NORMAL. Phenomena of passing radio waves through space when atmospheric and/or ionospheric conditions are such as to permit the passage with little or no difficulty.

SINGLE-HOP. Process by which radio waves reach a distant receiving point by one refraction in the ionosphere.

PROPAGATION CONSTANT.

1. Propagation constant per unit length of a uniform line is the natural logarithm of the ratio of the current at a point on the line to the current at a second point, at unit distance from the first point, along the line in the direction of transmission, when the line is infinite in length, or is terminated in its characteristic impedance.
2. Propagation constant per section of a periodic line is the natural logarithm of the ratio of the current entering a section to the current leaving the same section, when the periodic line is infinite in length, or is terminated in its iterative impedance.
3. Propagation constant of an electric transducer is the natural logarithm of the ratio of the current entering the transducer to the current leaving the transducer, when the transducer is terminated in its iterative impedances.

PROPAGATION FACTOR.

Propagation ratio.

PROPAGATION RATIO.

Propagation ratio, a wave propagated from one point to another, is the vector ratio of the electric or magnetic intensity at the second point to that at the first point.

PROPAGATION TIME DELAY.

Time required for a wave to travel between two points on a transmission line. (Reference: DELAY.)

PROPELLANT.

Fuel substance carried in a rocket to be expelled as hot exhaust gases which produce thrust.

PROPORTIONAL COUNTER.

Sealed-off tube containing an inert gas such as argon, krypton, xenon, methyl bromide, etc., used in a manner similar to a Geiger-Muller counter. Operates on low voltages, 100 volts.

PRORATE.

To assign a value to a portion in ratio of the value of the portion of the value of the whole.

PROSIGN (PROCEDURE SIGN).

One or more letters or characters, or combination thereof, used to facilitate communication by conveying, in a condensed standard form, certain frequently used orders, instructions, requests, and information related to communications.

PROTECT.

Implies responsibility for properly handling messages to specific stations and addressees in accordance with specific or predetermined instructions.

PROTECTED.

Circuits equipped with devices for safeguarding from excess voltage or current.

PROTECTED MACHINE.

Machine in which all ventilating openings in the frame are protected with wire screen, expanded metal, or perforated covers.

PROTECTIVE CABLE.

Small gage quadded cable used in toll cables to serve as fuses. Usually at building entrances.

PROTECTIVE DEVICE.

Device for keeping current, voltage, or power of undesirably large magnitude out of a given part of an electric circuit.

PROTECTIVE GAP.

Spark gap provided between a conductor and the earth by suitable electrodes to permit high-voltage surges due to lightning to pass harmlessly

to earth through the gap without damaging equipment. (Reference: LIGHTNING ARRESTER.)

PROTECTIVE RELAY.

Relay, the principal function of which is to protect service from interruption or to prevent or limit damage to apparatus.

PROTECTIVE RESISTANCE.

Resistance used in series with a gas tube or other device to limit current flow to a safe value.

PROTECTIVE SCREEN.

Protective screen, in a burglar alarm system, is a lightweight barrier of either solid strip or lattice construction, carrying electric protective circuits, and barring access through a normal opening to protected premises.

PROTECTIVE SIGNALING.

Initiation, transmission, and reception of signals involved in the detection and prevention of property loss or damage due to fire, burglary, robbery, and other destructive conditions, and in the supervision of persons and equipment concerned with such detection and prevention.

PROTECTOR.

Device to protect equipment or personnel from high voltages or currents.

PROTECTOR BLOCK.

Rectangular piece of carbon leakelite, with a metal insert, or porcelain with a carbon insert which, in combination with each other, make one element of a protector. They form a gap which will break down and provide a path to ground for voltages over 350 volts.

PROTECTORS.

Current limiting devices consisting of heat coils and protector blocks associated with each incoming line at the vertical manual direction finder.

PROTON.

Positive particle in an atom. The smallest quantity of positive electricity that can exist in a free state.

PROTOTYPE MODEL.

Model suitable for complete evaluation of mechanical and electrical form, design, and performance. It shall be of final mechanical and electrical form, employ approved parts, and be completely representative of final equipment.

PROTRACTOR.

Instrument for measuring or laying off angles mechanically. It consists of a graduated arc or semicircle, sometimes containing a radial arm.

PROV (PROVISIONAL).**PROWORD (PROCEDURE WORD).**

Word or phrase limited to radio and television procedures and used in lieu of a prosign.

PROXIMITY EFFECT.

Phenomenon of nonuniform current distribution over the cross section of a conductor caused by the variation of the current in a neighboring conductor.

PROXIMITY FUZE.

Fuze designed to detonate a projectile, bomb, mine, or charge when activated by an external influence in the close vicinity of a target. The VT FUZE is one type of proximity fuse.

PRR (PULSE REPETITION RATE).**PS (PICKET SHIP).**

U. S. Navy ships manned and operated as operational units of the continental air defense command; picket ships extend the seaward air-surveillance coverage.

PSEA (PHYSICAL SECURITY EQUIPMENT).

Equipment, such as fencing, safes, warning systems, etc., that provides, or helps provide, physical security.

PSEUDOSYNCHRONIZER.

Unit for supplying simulated data for testing decoder.

PSSP (PROGRAM OF COMMUNICATIONS-ELECTRONICS SUPPORT PROGRAM DOCUMENT).

Document designed to reflect the support for approved requirements listed in the USAF program for communications-electronics.

PST (PACIFIC STANDARD TIME).

Time based on the 120th meridian, west longitude.

PSY WAR (PSYCHOLOGICAL WARFARE).**PSYCHOLOGICAL ECM.**

Classified definition (Reference: AFM 100-50.)

PSYCHOLOGICAL WARFARE.

Planned use of propaganda and related informational measures designed to influence the opinions, emotions, attitudes, and behavior of enemy or other foreign groups in national policy and aims, or a military mission.

PT (POINT).

1. Positional notation character, or the location of an implied symbol, which separates the integral part of a numerical expression from its fractional part. For example, it is called the binary point in binary notation, and the decimal point in decimal notation. If the location of the point is assumed to remain fixed with respect to one end of the numerical expressions, a fixed-point system is being used. If the location of the point does not remain fixed with respect to one end of the numerical expressions, but is regularly recalculated, then a floating-point system is being used.

2. Term for a circuit termination in step-by-step equipment. (Reference: BINARY POINT.)

Note. A fixed-point system usually locates the point by some connection, while a floating-point system usually locates the point by expressing a power of the base.

PT-TO-PT (POINT-TO-POINT).

Radio communication between two definite fixed stations.

PTM (PULSE-TIME MODULATION).

Modulation in which the values of instantaneous sample of the modulating wave are called to modulate the time of occurrence of some characteristic of a pulse carrier.

Note. Pulse-duration modulation and pulse-position modulation are particular forms of pulse-time modulation.

PTM-PPM-AM.

This system is one in which the several pulse position or pulse time modulated subcarriers are used to amplitude modulate carrier.

PTT (POST TELEPHONES AND TELEGRAPHS).

PUBLIC ADDRESS SYSTEMS.

Transmission, amplification, and reproduction of speech and music with suitable fidelity and sufficient power to make entertainment or other intelligence available to large numbers of persons at one time.

PUBLIC AVIATION SERVICE.

Radiocommunication service open to public correspondence (paid or toll messages) to provide public communications to, from, and between aircraft in flight.

PUBLIC COIN-OPERATED TELEPHONES.

Telephones provided as a means of unofficial communications over the local and toll facilities, of the telephone company. The telephone and booth, if furnished, are the property of the telephone company, and are located as directed by the company of the Air Force installation.

PUBLIC COMMUNICATIONS SERVICE.

Telephone or telegraph service provided for the transmission of unofficial communications for the public.

PUBLIC HOUSING.

Quarters owned or provided by the government.

PUBLIC TELEPHONE STATION.

Station available for use by the public, generally on the payment of a fee which is deposited in a coin collector or is paid to an attendant.

PUBLICATION, NONREGISTERED.

Publication which bears no register number and for which periodic accounting is not required.

PUBLICATION, NUMBERED.

Document numbered for administrative convenience but for which no accounting is necessary.

PUBLICATION, REGISTERED.

Classified publication bearing a register number

as well as a long and short title, and for which periodic accounting is required.

PUBLICATIONS STATUS.

Past, present, or future state of effectiveness of a publication.

PULL.

Strain on a pole, in pole lines, caused by a turn in the pole lead, which tends to force it out of line.

PULL BOX.

1. Small concrete box with cover used to contain a splice where a manhole cannot be justified.
2. Metal box with a blank cover, inserted in a run of conduit, raceway, or tubing to facilitate pulling in the conductors.

PULL FINDER.

Scaled instrument for measuring the distance that a pole is out of line.

PULL-OUT TORQUE.

Pull-out torque of a synchronous motor is the maximum sustained torque which the motor will develop at synchronous speed for one minute, with rated voltage applied at rated frequency and with normal excitation.

PULL-UP CURRENT.

Minimum current value that will cause the armature of a relay to be pulled against the relay core.

PULL-UP TORQUE.

Pull-up torque of an ac motor is the minimum external torque developed by the motor during the period of acceleration from rest to the speed at which breakdown torque occurs. For motors which do not have a definite breakdown torque, the pull-up torque is the minimum torque developed up to rated speed.

PULLER, STRAND.

Gripping device for fastening to steel strand wire or cable to pull it into position.

PULLING.

Small changes in frequency of an oscillator caused by changes in load impedance. (Reference: FREQUENCY PULLING.)

PULLING EYE.

Device which is fastened to a conductor to which a hook or rope may be directly attached in order to pull the cable into or from a duct. Pulling eyes are sometimes equipped, like test caps, with facilities for oil feed or vacuum treatment.

PULLING FIGURE.

Difference between the maximum and minimum values of the oscillator frequency when the phase angle of the load-impedance reflection coefficient varies through 360° , while the absolute value of this coefficient is constant and equal to 0.20.

PULLING FREQUENCY.

Tendency of any load to change the frequency of an oscillator.

PULSATING CURRENT.

Nonuniform or varying electron flow, the variations of which take place at regular periods of time and may or may not include reversals of the direction of electron flow. There usually is an electron drift in one direction. (Reference: PULSATING DIRECT CURRENT).

PULSATING DIRECT CURRENT.

Direct current that is changing in value at regular or irregular intervals but has the same direction at all times.

PULSATING QUANTITY.

Periodic quantity which can be considered as the sum of a continuous component and an alternating component of the quantity.

PULSATING VOLTAGE.

Varying voltage, the variations of which take place during regular periods of time (in cycles) and may or may not include reversals of polarity. When applied to a conductor, a pulsating voltage causes an electron flow such that the average electron displacement is not zero, and there is an average electron drift in one direction.

PULSE.

1. Variation in the value of an electrical quantity as a function of time, such that the value departs from a given datum for a time interval and then returns to this datum for a much longer time interval.
 2. Signal characterized by the size and decay on time of a quantity, the value of which is normally constant.
 3. Surge of electrical energy, in radio, of short duration.
 4. Voltage level of short duration used in computers to represent a bit.
 5. Single disturbance characterized by the rise and decay in time or space of both of a quantity whose value is normally constant.
 6. Single impulse of a telephone dial or similar signal.
 7. Sudden change of brief duration, in relay operation, produced in the current or voltage of a circuit to actuate or control a switch or relay.
- Note. In these definitions, an RF carrier, amplitude modulated by a pulse, is not considered to be a pulse.

ENABLING. Pulse which opens a normally closed electrical gate, or otherwise permits an operation for which it is necessary but not sufficient condition.

EQUALIZING. Pulses, in television, at twice the line frequency, occurring just before and just after the vertical synchronizing pulses, which minimize the effect of line frequency pulses on the interlace.

MARKING. Signal, in teletype, interval during which time the teletypewriter selector unit is operated.

RF. Train of radio frequency oscillations whose envelope has the form of a pulse.

SPACING. Signal interval, in teletypewriter operation, during which the selector unit is not operated.

PULSE AMPLIFIER.

Circuit which amplifies the pulse wave form without materially altering its shape.

PULSE AMPLITUDE.

Maximum instantaneous value of a pulse.

Note. Spikes and ripples superimposed on the pulse are commonly considered to be separate transients, and are ignored in considering dimensions of the pulse itself.

PULSE AMPLITUDE MODULATION.

Modulation in which a wave is caused to control the amplitude of a pulse carrier.

PULSE ANALYZER.

Equipment used for analyzing pulses in order to determine their time, amplitude, duration, shape, and other characteristics.

PULSE CARRIER.

Carrier consisting of a series of pulses.

Note. Usually, pulse carriers are employed as sub-carriers.

PULSE COATING TECHNIQUES.

Classified definition. (Reference: AFM 100-50.)

PULSE CODE.

1. Pulse train modulated so as to represent information.
2. Loosely, a code consisting of pulses, such as Morse Code, Baudot Code, Binary Code.

PULSE CODE MODULATION.

Modulation which involves a code. The term is commonly used to signify that form of pulse modulation in which a code is used to represent quantized values of instantaneous samples of the signal wave.

PULSE COMPRESSION.

Classified definition. (Reference: AFM 100-50.)

PULSE DECAY TIME.

Interval of time required for the trailing edge of a pulse to decay from 90 percent to 10 percent of the pulse amplitude.

PULSE DOPPLER.

1. Radar system for distinguishing between fixed and moving targets by detecting the phase

difference between echo and coherent CW oscillator locked in phase with transmitted pulse.

2. Uses doppler beats between the moving target and clutter at the same range to give MTI by aural indication of target in range gate.

PULSE DURATION.

Time interval between the points on the leading and trailing edges at which the instantaneous value bears a specified relation to the pulse amplitude.

Note. Frequently the specified relation is taken as 50 percent. (Reference: PULSE WIDTH PULSE LENGTH.)

PULSE FREQUENCY MODULATION.

Form of modulation in which the pulse repetition frequency of the carrier is varied in accordance with the amplitude and frequency of the modulating signal.

PULSE GROUP.

Group of pulses of similar characteristics. (Reference: IMPULSE TRAIN, PULSE TRAIN.)

PULSE INTERVAL.

Time between corresponding points of successive pulses.

PULSE INTERWEAVING.

Process in which pulses from two or more time division multiplexes are systematically combined in time division for transmission over a common path.

PULSE LENGTH.

1. Nominal duration of a standard pulse which is the time interval between the half amplitude points on the rise and decay points of the curve. For pulses of other shapes, the points on the curve must be stated.

2. Time interval between the points on the leading and trailing edges at which the instantaneous value bears a specified relation to the pulse amplitude.

Note. Frequently the specified relation is taken as 50 percent. (Reference: PULSE DURATION, PULSE WIDTH.)

PULSE LENGTH MODULATION.

Pulse time modulation in which the value of each instantaneous sample of the modulating wave is caused to modulate the duration of a pulse.

Note. In pulse duration modulation, the modulating wave may vary the time of occurrence of the leading edge, the trailing edge, or both edges of the pulse. (Reference: PULSE WIDTH MODULATION.)

PULSE MODULATION.

Type of modulation in which the energy is grouped into certain chosen intervals or pulses and is absent from other intervals. The modulation in the signal is carried by a change in the location, amplitude, number and duration, or shape of the pulses in response to the intelligence being transmitted.

PULSE OPERATION.

Method of operation in which the energy is delivered in pulses.

Note. Pulse operation is usually described in terms of the pulse shape, the pulse duration, and the pulse recurrence frequency.

PULSE PERIOD.

Time required for one opening and closing of the loop of a calling telephone; that is, the time required to open and close the dial pulse springs once.

PULSE POSITION MODULATION.

Pulse time modulation in which the value of each instantaneous sample of a modulating wave is caused to modulate the position in time of a pulse. (Reference: PULSE MODULATION.)

PULSE RECURRENCE TIME.

Time elapsing between the start of one transmitted pulse and the next pulse. It is the reciprocal of the pulse repetition frequency.

PULSE REGENERATION.

Process of restoring a series of pulses to their original timing, form, and relative magnitude.

PULSE REPEATER.

Device used for receiving pulses from one circuit and transmitting corresponding pulses into another circuit.

PULSE REPETITION FREQUENCY.

Number of pulses per second.

PULSE RISE TIME.

Interval of time required for the leading edge of a pulse to rise from 10 percent to 90 percent of the pulse amplitude.

PULSE SHAPE.

Figure produced by the outline of a pulse when viewed on a cathode-ray tube.

PULSE SHAPER.

Transducer used for changing one or more characteristics of a pulse.

PULSE SPACING.

Interval between the leading edges of successive pulses.

PULSE SPECTRUM.

Energy spectrum of an RF pulse, usually including all components less than 60 db below the peak power level.

PULSE SPEED.

Number of pulse periods per second generated by the dial pulse springs opening and closing in rapid succession in response to the dialing of a digit. (Reference: IMPULSE FREQUENCY).

PULSE STRETCHER.

Circuit designed to extend the time duration of a pulse. Primarily used to make pulse modulation more readily discernible in an audio presentation.

PULSE STRETCHING.

Classified definition. (Reference AFM 100-50.)

PULSE TIME.

Period of time required to represent a bit.

PULSE TIMER.

Automatically causes radar to emit the short series of pulses at intermittent intervals.

PULSE TRAIN.

Group of pulses of similar characteristics. (Reference: IMPULSE TRAIN, PULSE GROUP.)

PULSE TRANSFORMER.

Special type of transformer designed to pass pulse currents and voltages as distinguished from the usual sine-wave type of transformer. Its major features are high-voltage insulation between windings, and to ground, low capacitance between windings, and low reactance in both windings.

PULSE TRANSMITTER.

Transmitter whose output envelope is in the form of pulses.

PULSE WIDTH.

Time interval between the points on the leading and trailing edges at which the instantaneous value bears a specified relation to the pulse amplitude.

Note. Frequently, the specified relation is taken as 50 percent. (Reference: PULSE DURATION, PULSE LENGTH.)

PULSE WIDTH MODULATION.

Pulse time modulation in which the value of each instantaneous sample of the modulating wave is caused to modulate the duration of a pulse.

Note. In pulse duration modulation, the modulating wave may vary the time of occurrence of the leading edge, the trailing edge, or both edges of the pulse. (Reference: PULSE LENGTH MODULATION.)

PULSE-DURATION MODULATION.

Pulse-time modulation in which the value of each instantaneous sample of the modulating wave is caused to modulate the duration of the pulse.

Note. 1. Pulse-length modulation has been used to designate this system of modulation.

2. In pulse-duration modulation, the modulating wave may vary the time of occurrence of the leading edge, the trailing edge, or both edges of the pulse.

PULSE-FORMING LINE.

Combination of circuit components used to produce a square pulse of controlled duration.

PULSE-FORMING NETWORK OR CIRCUIT.

Network or circuit which serves to produce a pulse of the required wave form.

PULSE-MODULATED RADAR.

Form of radar in which the radiation consists of a series of discrete pulses.

PULSE-MODULATED WAVES.

Recurrent wave trains in which the duration of the trains is, in general, short compared with the interval between them. Used extensively in radar.

PULSE-PHASE MODULATION.

(Reference: PULSE POSITION MODULATION.)

PULSE-SHAPING NETWORK OR CIRCUIT.

Network or circuit which makes the wave form of a pulse applied to the network approach the desired form.

PULSE-TIME MODULATION.

Modulation in which the values of instantaneous samples of the modulating wave are called to modulate the time of occurrence of some characteristic of a pulse carrier.

Note. Pulse-duration modulation and pulse-position modulation are particular forms of pulse-time modulation.

PULSED OSCILLATOR.

Oscillator which is made to operate during recurrent intervals by self-generated or externally applied pulses.

PULSED-CARRIER MODULATION.

Modulation of a pulsed carrier.

PULSING KEY.

1. Method of passing voice frequency pulses over the line under control of a key at the original office. Used with E and M supervision on inter-tell dialing.

2. System of signaling where numbered keys are depressed instead of using a dial. (Reference: KEY PULSE.)

PUNCHING.

Metal stamping, tinned and designed to make a soldered connection with a wire.

PUNCTURE.

Disruptive discharge through insulation involving a sudden and large increase in current through the insulation due to complete failure under electrostatic stress. (Reference: BREAK-DOWN.)

PUNCTURE VOLTAGE.

Voltage at which an insulator or shell is electrically punctured when subjected to a gradually increasing voltage.

PUP JACK.

Small single-hole jack into which fits a single-pin contact plug. (Reference: TIP JACK.)

PUPIN COIL.

Iron-core leading coil inserted in telephone lines at regular intervals to balance out the effect of capacitance between the lines.

PUR (PURCHASE).**PURE TONE.**

Sound produced by sound waves having only a single frequency, without harmonic frequencies. (Reference: SIMPLE TONE.)

PURITY.

Physically complete saturation of a hue, free of white and uncontaminated by other colors. Color TV terminology.

PURITY CONTROL.

Variable resistor which controls dc power through a purity coil mounted around the picture tube neck. Color TV terminology.

PUSH BUTTON CONTROL.

Control of motors and other electrical equipment by means of relays and associated starting equipment actuated through auxiliary circuits that are opened and closed by push buttons in convenient locations.

PUSH BUTTON SWITCH.

Switch in which the contacts are closed by pushing one button and opened by pushing another button.

PUSH BUTTON TUNER.

Device that automatically tunes a radio receiver

to the desired station when the button assigned to the station is pressed.

PUSH-PULL AMPLIFIER.

Amplifier employing two tubes per stage so arranged that the nonlinear distortion produced by one tube is neutralized in large measure by that produced by the other tube.

PUSH-PULL CIRCUIT.

1. Circuit containing two like elements which operate in 180° phase relationship to produce additive output components of the desired wave, with cancellation of certain unwanted products.
2. Amplifier circuit with two electron tube units so arranged that the grids are energized 180° out of phase. The combined plate currents are approximately twice the output of one unit.

PUSH-PULL DOUBLER.

Amplifier used for frequency doubling, consisting of two vacuum tubes with their grids (input) connected in push-pull and their plates (output) in push-pull or parallel.

PUSH-PULL MICROPHONE.

Microphone which makes use of two like microphone elements actuated by the same sound waves and operating 180° out of phase.

PUSH-PULL OSCILLATOR.

Vacuum-tube oscillator having two tubes connected, as in a push-pull amplifier, with control grids and plates connected to opposite ends of tuned circuits.

PUSH-PULL TRANSFORMER.

Audio-frequency transformer having a center-tapped winding for use in a push-pull amplifier circuit.

PUSH-PUSH CIRCUIT.

Circuit comprising two electron tubes, with the two grids operating in 180° phase relationship and the two plates in parallel.

PUSH-TO-TALK OPERATION.

Method of communication over a speech channel in which transmission occurs in only one direction at a time, the talker being required to keep a switch operated while he is talking.

PUSH-TO-TYPE OPERATION.

Form of telegraph operation, employing a one-way reversible circuit, in which the operator must keep a switch operated in order to send from his station. It is generally used in radio transmission where the same frequency is used for both transmission and reception.

PUSHBACK HOOKUP WIRE.

Tinned copper wire covered with loosely braided insulation that can be pushed back with the fingers sufficiently to expose enough bare wire for making a connection.

PWM (PULSE WIDTH MODULATION).

Pulse time modulation in which the value of each instantaneous sample of the modulating wave is caused to modulate the duration of a pulse.

Note. In pulse duration modulation, the modulating wave may vary the time of occurrence of the leading edge, the trailing or both edges of the pulse. (Reference: PULSE LENGTH MODULATION.)

PWM-FM.

System in which several pulse width modulated subcarriers are used to frequency modulate a carrier.

PX (POST EXCHANGE).

Retail shop or store at an Army post or installation, operated under the supervision of the commander of the post or installation.

PYRAMID WAVE.

Triangular wave, the sides of which are approximately equal in length.

PYRAMIDAL HORN.

Horn, the sides of which form a pyramid.

PYROELECTRIC.

Characterized by the property, exhibited by certain asymmetric crystals, of becoming electrically polarized and of developing charges of pyroelectricity upon change of temperature.

PYROMETER.

Instrument for measuring high temperatures, either by means of heat produced expansion and movement of one of its parts (as in mechanical or direct-acting pyrometers) or by electrical currents generated in a thermocouple, as in the electric pyrometer.

PYRON DETECTOR.

Crystal detector in which rectification occurs between iron pyrites and copper or other metallic points.

PYROTECHNIC DECOY.

Device to furnish a target which the infrared seeker missile prefers to the penetration type aircraft.

PYROTECHNICS.

Ammunition containing chemicals that produce a smoke or brilliant light in burning; used for signaling or for lighting up an area at night; fireworks.

PYROTECHNICS CODE.

Prearranged code in which meanings are assigned to the various colors and arrangements of pyrotechnics.

Q

Q.

1. Symbol used to indicate the electrical quality or figure of merit of efficiency of a coil or circuit. Rating determined by the ratio of reactance to resistance. The higher the Q the greater the selectivity of the circuit.

2. Measure of the relationship between stored energy and the rate of dissipation in certain types of electric elements, structures or materials. The Q of an inductor at any frequency is the magnitude of the ratio of its reactance to its capacitor at any frequency is the magnitude of the ratio of its susceptance to its effective shunt conductance at that frequency. For a simple resonant circuit, Q is numerically equal to the inductive reactance divided by the resistance of the circuit.

Q FACTOR.

Rating applied to coils and resonant circuits, equal to reactance divided by resistance. Often called Q.

Q MESSAGE.

Naval message by which information concerning allied and enemy minefields, searched channels and secret, confidential or restricted navigational aids or dangers is promulgated.

QC (QUALITY CONTROL).

1. Contraction of the term Statistical Quality Control. In this manual, Quality Control will refer to those statistical techniques which are used to distinguish between normal and abnormal radar station performance.

2. As used in monitoring detection performance, it is a modern scientific tool for telling quickly how well a radar station is detecting aircraft relative to its own normal performance. It does this by a procedure of sampling detection performance frequently, plotting the results on a control chart, seeking a cause for every case of abnormal performance and continually reviewing the data.

QM (QUARTERMASTER).

Staff officer of an army unit or post who is responsible for furnishing food, clothing and certain other supplies and services.

QMC (QUARTERMASTER CORPS).

Army corps providing certain supplies and services, and consisting of the Quartermaster General, his deputies, assistants and such other members of the Army as may be assigned.

QRC (QUICK REACTION CAPABILITY).

As established by AR 80-32. Provides a quick method of development and producing ECM equipment for urgent operational requirements.

QRC EQUIPMENT.

Reaction capability equipment. Equipment obtained under expedited procurement programs to fulfill special equipment requirements. (Reference: 80-32.)

QRL SIGNAL.

1. Abbreviation in International List of Abbreviations for Radiotelegraphy to represent complete sentences. The signal is followed by a question mark when the question form of the sentence is intended. Thus, QRL means "I am busy" and QRL? means "Are you busy?"

2. Coarse chrominance transmission primary 0-0.5 MC wide, which combines with L signal to convey chrominance information, comprises sidebands produced by modulating sub-carrier 147° from reference. Called quadrature signal. Color TV terminology.

QSL CARD.

Card sent by one radio amateur to another to verify radio communication with each other.

QUAD.

Structural unit employed in cable, consisting of four separately insulated conductors twisted together. (Two twisted pairs may also be used.)

QUADEDDED CABLE.

Cable in which some of the conductors are arranged in the form of quads.

QUADRADAR.

Compact, light-weight, low cost, easily transportable GCA radar. In addition to surveillance and precision approach, this set will perform the functions of height-finding and airport taxi control. The weight of the equipment is 2700

pounds. One operator is required. The equipment was designed especially for small civil airports and for military applications where transportability is an important consideration. A similar GCA radar set called SPAR has also been developed. However, this is a precision approach system only.

QUADRANT.

1. Sector, arc, or angle of 90° .
2. Instrument for measuring or setting vertical angles.

QUADRANT ELECTROMETER.

Electrometer for measuring voltages and charges by means of electrostatic forces. It consists of a metal plate or needle suspended horizontally inside a short vertical cylinder of metal that is divided into four insulated parts, each connected electrically to its opposite. The two pairs of quadrants are connected to the two terminals between which potential difference is to be measured. The resulting electrostatic forces cause an angular displacement of the suspended plate, proportional to voltage.

QUADRANTAL ERROR.

Error in magnetic compass readings due to the magnetic field of the steel hull of a ship. A similar error occurs in radio direction finders on vessels and aircraft due to metal structures in the vicinity of the loop antenna.

QUADRATURE.

Quadrature expresses the phase relationship between two periodic quantities of the same period when the phase difference between them is one-fourth of a period.

QUADRATURE AMPLIFIER.

Stage which shifts chrominance sub-carrier 90° and applies resulting to Q demodulator.

QUADRATURE COMPONENT.

1. Reactive component of a current or voltage due to inductive or capacitive reactance in a circuit.
2. Vector representing an alternating quantity which is in quadrature (at 90° with some reference vector).

QUADRUPLEX CIRCUIT.

Telegraph circuit designed to carry two messages in each direction at the same time.

QUALIMETER.

Instrument for indicating the hardness (penetrating ability) of X-rays. (Reference: PENETROMETER.)

QUALITY.

1. Frequency response between the origin and the terminus.
2. Ratio of the reactance of an inductor to its ac resistance.
3. Fidelity of reproduction of a sound program or television image.

QUALITY CONTROL.

1. Contraction of the term Statistical Quality Control. In this manual, Quality Control will refer to those statistical techniques which are used to distinguish between normal and abnormal radar station performance.
2. As used in monitoring detection performance, it is a modern scientific tool for telling quickly how well a radar station is detecting aircraft relative to its own normal performance. It does this by a procedure of sampling detection performance frequently, plotting the results on a control chart, seeking a cause for every case of abnormal performance and continually reviewing the data.

QUALITY FACTOR.

Q-factor of a circuit or device, equal to the inductive or capacitive reactance divided by the resistance.

QUANTITY OF ELECTRICITY.

Quantity of electricity on (or in) a body is the excess of one kind of electricity over the other kind. A plus sign indicates that the positive electricity is in excess, a minus sign indicates that the negative electricity is in excess.

QUANTITY OF X-RAYS.

Product of intensity of X-rays multiplied by time. It is not proportional to energy, but rather is proportional to the total ionization-producing ability.

QUANTIZATION.

1. Process by which the position of radar or Mark X returns is determined with respect to pre-established azimuth and range quantities.
2. In communication, quantization is a process in which the range of values of a wave is divided into a finite number of smaller subranges, each of which is represented by an assigned (or quantized) value within the subrange.

QUANTIZATION DISTORTION.

Inherent distortion introduced in the process of quantization.

QUANTIZATION LEVEL.

Level in quantization is a particular subrange or a symbol designating it.

QUANTIZED.

1. Composed of, or associated with, quanta of energy.
2. Expressed in terms of the general quantum theory.

QUANTIZED PULSE MODULATION.

Pulse modulation which involves quantization.

QUANTUM.

Discrete portion of energy, of definite amount, first associated with intra-atomic or intramolecular processes involving changes among the electrons and with the corresponding radiation.

QUANTUM CONDITION.

Mathematical condition that must be satisfied for any given quantum state of an atom or other system.

QUANTUM CORRECTION.

Correction required by any classical law or formula to bring it into harmony with the quantum theory.

QUANTUM EFFICIENCY.

Number of molecules decomposed per quantum of light absorbed in a photochemical reaction.

QUANTUM EQUIVALENCE PRINCIPLE.

When a quantum of radiation is absorbed in a photoelectric or photovoltaic process, its entire

energy reappears in some other definite form, such as the kinetic energy of a released photoelectron or the energy of an ionized atom.

QUANTUM LIMIT.

Shortest wave length in an X-ray spectrum produced by an X-ray tube. It is definitely related to the maximum voltage applied to the tube, in accordance with the Planck-Einstein quantum equation. (Reference: MINIMUM WAVE LENGTH.)

QUANTUM MECHANICS.

1. General physical theory which seeks to deal with atomic structure and related problems in terms of only those quantities which can be actually measured, and excluding such purely inferential concepts as the position or the velocity of an electron in a supposed orbit. It embraces the matrix mechanics of Heisenberg, the wave mechanics of Schroedinger, and the transformation theory of Jordan and Dirac.
2. Mechanics of phenomena which are subject to quantum conditions, such as the processes going on within and among the atoms and molecules.

QUANTUM NUMBER.

Integral number which is characteristic of the statement of a quantum condition.

QUANTUM OF ACTION.

Constant appearing in many physical formulas, having the dimension of action (energy x time) and having a numerical value of 6.547×10^{-27} erg-second. It represents the ratio of the energy of any radiation quantum to its frequency and was first recognized by the German physicist M. Planck in 1900. (Reference: PLANCK'S CONSTANT.)

QUANTUM STATE.

State in which an atom or molecule may exist permanently or momentarily. Transitions between these states are thought to cause the emission of distinct radiation frequencies and quanta, corresponding to lines of the spectrum.

QUANTUM THEORY.

Theory that atomic radiation can occur only in a certain fixed unit or quantum the size of which

is proportional to the frequency of the oscillations. Such quanta of energy are radiated when electrons pass from one state to another.

QUANTUM TRANSITION.

Abrupt readjustment in an atom or molecule, accompanied by the emission or absorption of a quantum of radiant energy.

QUARTER-PHASE OR TWO-PHASE CIRCUIT.

Combination of circuits energized by alternating electromotive forces which differ in phase by a quarter of a cycle (90°).

QUARTER-WAVE ANTENNA.

Antenna which has an electrical length equal to one-fourth the wave length of the signal to be transmitted or received. Its physical length will be slightly shorter than one-quarter wave length.

QUARTER-WAVE ATTENUATOR.

Arrangement of two wire gratings, spaced about one-quarter wavelength apart, in a wave guide. When properly designed, the wave reflected from the first grating is annulled by that reflected from the second grating. If a third grating is added, the attenuator will act upon waves traveling in either direction. When such an attenuator is designed to suppress certain unwanted components of wave-guide energy, it is known as a quarter-wave filter.

QUARTER-WAVE FILTER.

Two wire gratings spaced about one-quarter wave length apart in a wave guide and designed to reflect or to absorb almost all the energy of a particular wave.

QUARTER-WAVE LENGTH TRANSFORMER.

One quarter-wave length section of transmission line used as an impedance-matching transformer.

QUARTER-WAVE PLATE.

Plate of mica or other double refracting crystal material of such thickness as to introduce a phase difference of one-quarter cycle between the ordinary and the extraordinary components of light passing through.

QUARTER-WAVE RESONANCE.

Condition in which the resonant frequency of a

quarter-wave antenna is equal to the operating frequency at which the antenna is to be used.

QUARTER-WAVE RESONANT FREQUENCY.

That frequency at which resonance occurs in a given quarter-wave antenna.

QUARTER-WAVE SUPPORT.

Method of insulating the inner from the outer conductor of a coaxial transmission line. A quarter-wave metallic stub is used in place of dielectric insulators.

QUARTER-WAVE TERMINATION.

Metal plate and a wire grating spaced about one-quarter of a wave length apart in a wave guide, with the plate serving as the termination of the guide. Waves reflected from the metal plate are canceled by waves reflected from the grating, so that all energy is absorbed (none is reflected) by the quarter-wave termination.

QUARTER-WAVE TRANSMISSION LINE.

Transmission line that is one-quarter wave length long at the frequency it is handling.

QUARTERMASTER.

Staff officer of an Army unit or post who is responsible for furnishing food, clothing, and certain other supplies and services.

QUARTERMASTER CORPS.

Army corps providing certain supplies and services, and consisting of the Quartermaster General, his deputies, assistants, and such other members of the Army as may be assigned.

QUARTZ.

Natural crystal. Some forms have piezoelectric properties. Quartz crystals are highly useful for stabilizing frequencies generated in radio transmitters and some types of receivers.

QUARTZ CRYSTAL.

1. Mother crystal of quartz as found in nature, having a hexagonal cross section coming to a point at one end and a fractured base where it was broken away from the rock formation in which it grew.
2. Crystal unit in the form of a thin slab or plate cut from a quartz crystal and carefully ground

to be a thickness that will make it vibrate at the desired normal frequency when supplied with energy. It is used to control the frequency of a vacuum-tube oscillator in a transmitter and for other purposes. (Reference: CRYSTAL.)

QUARTZ LAMP.

Mercury-vapor lamp having a transparent envelope made from quartz instead of glass. Quartz resists heat, permitting higher current, and passes ultra-violet rays that are absorbed by ordinary glass.

QUARTZ OSCILLATOR-PLATE.

Name given to the finished, shaped, piece of quartz used as a control in radio oscillator circuits. Synonymous with piezoid. The main function of the oscillator-plate is to maintain a given frequency constant in an electrical circuit.

QUARTZ PLATE.

Flat section cut from a quartz crystal in such a way as to provide desired piezoelectric properties. Used in oscillator circuits to control frequency or in filter circuits to control bandwidth passed.

QUARTZ RESONATOR.

Piezoelectric resonator using a quartz plate.

QUARTZ-CRYSTAL OSCILLATOR.

Crystal-controlled oscillator in which the crystal is a plate of quartz. (Reference: CRYSTAL OSCILLATOR.)

QUENCH FREQUENCY.

AC voltage applied to an electrode of a tube used as a super-regenerative detector. It alternately varies the sensitivity of the detector thereby preventing any sustained oscillation. The quench frequency is usually low in comparison with the signal frequency to be received. The number of times per second that a circuit is caused to go in and out of oscillation. (Reference: SUPER-REGENERATION.)

QUENCH GAP.

Quench spark gap.

QUENCH OSCILLATOR.

Circuit in a super-regenerative receiver which produces the frequency signal.

QUENCHED SPARK.

Spark consisting only of a few sharply defined oscillations, owing to an arrangement that de-ionizes the gap almost immediately after the initial spark has passed.

QUENCHED SPARK GAP.

Spark gap having provisions for producing a quenched spark. One form consists of many small gaps between electrodes that have relatively large mass and are good radiators of heat. They serve to cool the gaps rapidly and thereby stop conduction.

QUENCHING.

1. Process of terminating the discharge in a tube.
2. Cooling of a metal or alloy at such a rate that a phase transformation or an order/disorder change is suppressed.

QUENCHING CIRCUIT.

Circuit which reduces the operating voltage at each pulse and prevents a second discharge.

QUENCHING FREQUENCY.

Locally generated frequency produced in a super-regenerative detector stage at regular intervals to prevent oscillation during reception of strong signals.

QUICK REACTION CAPABILITY.

QRC pertains only to electronic countermeasure and is defined as the ability to provide timely solutions to engineering, development, modification, and production problems which result from technical and tactical surprise by an enemy, new intelligence, and changes to our systems and tactics.

QUICK-BREAK.

Switch or circuit breaker is quick-break when it has a high contact-opening and speed, independent of the operator.

QUICK-BREAK FUSE.

Fuse arranged to draw out the arc and break the circuit rapidly when the fuse wire melts, by separating the broken ends with a spring, weight, or other means.

QUICK-BREAK SWITCH.

Switch that breaks a circuit rapidly and independently of the rate at which the switch handle is moved, to minimize arcing.

QUICK-MAKE.

Switch or circuit breaker is quick-make when it has a high contact-closing speed, independent of the operator.

QUIESCENT CARRIER TELEPHONY.

Radiotelephony system in which the carrier is suppressed whenever there are no voice signals to be transmitted.

QUIESCENT PERIOD.

Resting period, or the period between pulse transmissions.

QUIESCENT POINT.

Point on the characteristic curve of an amplifier which represents the conditions existing when the signal input is zero.

QUIESCENT PUSH-PULL.

Push-pull output stage so arranged in a radio receiver that practically no current flows when no signal is being received. There is thus no noise

when tuning between stations.

QUIESCENT STATE.

Time during which a tube or other element of an electric circuit is not performing its active function in the circuit.

QUIESCENT VALUE.

Voltage (or current) value for a vacuum-tube electrode when no signals are present.

QUIET AUTOMATIC VOLUME CONTROL.

Circuit in which the automatic volume control does not function until the signal reaches a certain strength. Consequently full amplification is not applied to background noises encountered when tuning between stations.

QUIET BATTERY.

Source of energy of special design or with added filters which is sufficiently quiet and free from interference that it may be used for speech transmission.

QUIET TUNING.

Having provisions for silencing the output of a radio receiver at all times except when it is accurately tuned to an incoming carrier wave.

R

R (ROUND ROBIN).

Track classification in air defense, for a nonstop flight of an airborne object or formation which will take off and land at the same place.

R/A (RADIOACTIVE).

Pertaining to or indicating radioactivity.

R-INDICATOR.

In radar; an expanded type A presentation.

RA (RANGE).

Designation for Range (Adcock, Vertical Radiators) power 150 watts or more (CAA).

RAAF (ROYAL AUSTRALIAN AIR FORCE).**RACES (RADIO AMATEUR CIVIL EMERGENCY SERVICE).****RACEWAY.**

Channel for holding wires and cables, which is designed expressly and used solely for this purpose. Raceways may be of metal, wood, or insulating material.

RACK.

Structure, such as vertical beams, on which units of apparatus are mounted.

BATTERY. Shelf, or assembly of shelves, on which the office storage batteries are mounted.

CABLE. Structure on which cables, cloth or lead covered, may be hung.

RACK AND PINION.

Method of securing controlled motion, consisting of a gear (pinion) meshing with a toothed bar (rack).

RACON (RADAR BEACON).

Transponder used as a navigational beacon, which, when used in conjunction with other suitable equipment, permits the determination of bearing and/or range from the interrogator to the RACON.

RACON STATION.

Radionavigation land station which employs a racon. (In certain instances, a racon station may

be placed on board a ship or aircraft) (Reference: RACON (RADAR BEACON).)

RAD.

The control referred to is radio control.

RADAR (RADIO DETECTING AND RANGING).

Equipment that determines the distance and usually the direction of objects by transmission and return of electromagnetic energy.

AUTOMATIC TRACKING. Radar set which can continually and automatically correct its beacon orientation to keep a selected target in its beam. Source-traveling radars also supply range-teaching information to computers for fire control systems.

CONTINUOUS-WAVE. System in which a transmitter sends out a continuous flow of radio energy to the target which reradiates (scatters) the energy intercepted and returns a small fraction to a receiving antenna.

EARLY WARNING. Radar employed to search for distant enemy aircraft and/or surface vessels.

FREQUENCY-MODULATED. Form of radar in which the radiated wave is frequency modulated and the returning echo beats with the wave being radiated, thus enabling the range to be measured.

GROUND CONTROLLED INTERCEPTION.

Ground-based radar employed to direct interceptors to target aircraft.

NAVIGATIONAL. Radar equipment used to assist in navigation and plotage.

PRECISION APPROACH. Rapid-scanning radar system which is so located on an airport that aircraft, on approach to the runway served by the system, are presented on radar displays in terms of linear deviation from a desired glide path and in terms of distance to go to the touchdown point on the runway. PAR control personnel talk to the pilot over conventional airground communication circuits giving information necessary to direct the aircraft through the low approach phase of the landing operation.

PRIMARY. Radar using reflection only.

PULSE-MODULATED. Form of radar in which the duration of the wave trains is, in general, short compared with the interval between them.

SEARCH. Radar whose primary function is detection with moderately accurate range, bearing, elevation, and target composition data.

SEARCHLIGHT CONTROL. Radar equipment which is intended to detect aircraft for the purpose of directing searchlights.

SECONDARY. Radar using automatic retransmission on the same or on a different radio frequency.

RADAR ABSORBING MATERIAL.

Classified definition. (Reference AFM 100-50.)

RADAR AIR TRAFFIC CONTROL CENTER.

Facility established by competent authority to provide adequate supervision of air traffic within a specified control area, which accomplishes control by electronic video means in accordance with established and authorized air traffic control separation standards and procedures.

RADAR APPROACH CONTROL.

Use of radar for the direct control of aircraft within a given area. Usually, two types of radar equipment are employed. One is an air surveillance radar such as the AN/SPN-18 for control of the aircraft from the time it enters the control zone until it approaches the landing field. The other is a precision approach radar such as the AN/FPN-16 for control of the aircraft during its approach to the runway. The AN/FSA-4 control and monitoring equipment has been developed to provide control, coordination, and communications facilities to RAPCONs.

RADAR APPROACH CONTROL CENTER.

Military agency responsible for aircraft take-off and landings at Air Force bases under instrument flying conditions.

RADAR ATTENUATION.

Ratio of the power delivered by the transmitter to the transmission line connecting it with the transmitting antenna to the power reflected from

the target which is delivered to the receiver by the transmission line connecting it with the receiving antenna.

RADAR BEACON.

Transponder used as a navigational beacon, which, when used in conjunction with other suitable equipment, permits the determination of bearing and/or range from the interrogator to the RACON. (Reference: RACON (RADAR BEACON).)

RADAR BOARD.

Chart on which radar reports are plotted; used especially in aircraft warning systems.

RADAR BOMB SCORING.

System or procedure in which ground-based radar and plotting equipment is used to aid in determining the theoretical point or points of impact in a simulated bombing mission.

RADAR CALIBRATION.

Redefined to mean taking measurements on various parts of electronic equipment, including radar, IFF, and communications, to determine the equipment's performance level, and whether it conforms with T.O. specifications. Formerly, calibration meant range evaluation against aircraft. As redefined, calibration now precedes evaluation activities which involve evaluation aircraft.

RADAR CAMOUFLAGE.

Art, means, or results of concealing the presence or the nature of an object from radar detection by the use of coverings or surfaces which considerably reduce the radio energy reflected toward a radar.

RADAR CELL.

Volume whose dimensions are one radar pulse length by one radar beam width.

RADAR CONFUSION REFLECTORS.

Metallic devices such as chaff or corner reflectors which are used to return false and confusing signals to the enemy radar receiver. The use of radar confusion reflectors is termed reflective jamming.

RADAR CONTACT.

Aircraft is said to be in radar contact when its radar echo can be seen on the PPI tube and is properly identified.

RADAR CONTROL AREA.

Designated space within the surveillance radar system coverage in which aircraft approach, holding, stacking and similar operations are performed under guidance of radar.

RADAR CONTROLLED.

Air traffic controller or other responsible person proficient in the use and interpretation of radar and capable of performing one or more of the following functions:

1. Surveillance controller.
2. Traffic director.
3. Final controller.

RADAR COUNTERMEASURES.

Means employed to obtain information about enemy forces from his use of radar, and to prevent him from obtaining any accurate or useful information about our forces through the use of his radar. Countermeasures methods are of four types: interception, jamming, deception, and evasion.

RADAR COUNTERMEASURES AND DECEPTION.

This includes all electronic countermeasures against radar.

RADAR COVERAGE.

Effective coverage of an area or airspace provided by a radar set or network.

RADAR COVERAGE INDICATOR.

Device showing how far a given aircraft should be tracked by a radar station, and also provides a "reference (detection) range" for quality control. The device takes into account aircraft size, altitude, screening angle, site elevation, type radar, antenna radiation pattern, and antenna tilt.

RADAR DATA.

Either long-range or gap-filler radar information modified to a form which a computer can use. The two types of data are as follows:

1. Correlated, associated with a track.

2. Uncorrelated, not associated with a track.

RADAR DECEPTION.

Radiation or reradiation of radar signals in a manner intended to confuse or mislead an operator in the interpretation of data shown on the radar scope. Deception of the enemy by electronic countermeasures against his radar. (Reference: ELECTRONIC DECEPTION.)

RADAR DISTRIBUTION SWITCHBOARD.

Switching panel for connecting video, trigger, and bearing from any one of five systems to any or all of 20 repeaters. Also contains order lights, bearing cutouts, alarms, test equipment, etc.

RADAR ECHO.

1. Radio-frequency energy received after reflection from an object.
2. Term is also used to describe the deflection or change of intensity on a cathode-ray tube display produced by a radar echo.

RADAR EQUATION.

Basic equation applicable to a radar system. Its simplest and most fundamental form is the free-space radar equation which governs the radar signal when it is propagated between a radar and a reflecting object or target in otherwise empty space. The equation gives the range of the target in terms of peak transmitter power, the maximum power gain of the radiator, the echo area or scattering cross section of the target, the effective absorption cross section of the receiving antenna, and the power generated at the receiver input. The maximum range of a radar depends on the fourth root of the transmitter power, the antenna gain and absorption area, the target echo area, and the inverse of the minimum discernible received power.

RADAR EVASION.

Radar evasion is a term used to describe flight plans and tactics adopted to reducing the chances of detection, tracking, and seeking by enemy radars. The definition includes aircraft design techniques to accomplish radar evasion.

RADAR HORIZON.

Most distant point (from the radar antenna

along a given azimuth) on the earth's surface illuminated by the radar on purely geometric conditions. The conditions are that the illumination occurs along a straight line path where the path is taken over an effective earth's radius of $\frac{4}{3}$ its true radius, and where the radar's illuminating power is considered unlimited.

RADAR INDICATOR.

Unit of radar equipment which provides a visual indication of the reflected energy received, using a cathode-ray tube or tubes for such indication. The radar indicator comprises, besides the cathode-ray tube, the sweep and calibration circuit, and associated power supplies.

RADAR INTELLIGENCE.

1. Intelligence concerning radar, or intelligence derived from the use of radar equipment.
2. Organization or activity that deals with such intelligence.

Note. In sense 1, the term radar intelligence has been used with several specific meanings. These are: 1. That aspect of electronic intelligence that deals with radar. (Reference: ELECTRONIC INTELLIGENCE.) 2. Intelligence concerning the radar aspects of a radar mission, especially a radar bombing mission; radar target intelligence. (Reference: RADAR TARGET INTELLIGENCE.) 3. Intelligence derived from information procured by means of radar, particularly with regard to bomb damage assessment and bomb scoring. Classified definition. (Reference: AFM 100-50.)

RADAR INTERCEPTION.

Monitoring of enemy radar signals for information purposes.

RADAR JAMMING.

Radar-frequency signals or the use of such signals intended to obliterate and prevent reading of signals on a radar scope.

RADAR MAPPER GAP FILLER.

Airman in the direction center air surveillance branch responsible for mapping out unwanted gap-filler-data on the mapping console.

RADAR MAPPER LONG RANGE.

Airman at a long-range radar site responsible for mapping out unwanted radar data which would not otherwise be eliminated from the computer by programmed masking action.

RADAR NAVIGATION.

Use of radar to assist in navigation and pilotage.

RADAR NAUTICAL MILE.

Time interval, approximately 12.361 microseconds, required for radio energy to travel one nautical mile and return; a total of two nautical miles.

RADAR NOT FUNCTIONING PROPERLY, BUT STILL CAPABLE OF TRACKING AND REPORTING REQUISITION.

Priority requisition, accorded second priority to ROCP requisitions, submitted for parts required to keep the basic radar and associated communications equipment to a point where continuous tracking and reporting can be accomplished.

RADAR OUT OF COMMISSION FOR PARTS REQUISITION.

Priority requisition submitted for parts required to return basic radar facility, including associated communications equipment, to an operational status when the site is not capable of tracking and/or reporting.

RADAR PAINT.

Type of radar absorbing material.

RADAR PICKET.

Ship or airborne early warning aircraft, stationed at a distance from the force protected, for the purpose of increasing the radar detection range.

RADAR PLANNING DEVICE.

System in which a topographical relief model and a narrow beam of light are used to simulate PPI presentations by photographing the light and shadow areas on the model.

RADAR RECEIVER.

Electronic device which amplifies the reflected or returning radar signal, demodulates the RF carrier, further amplifies the desired signal, and delivers it, in a form suitable for presentation,

to the indicator. Differs from the usual radio receiver in that it is more sensitive, has a lower noise level, and is designed to pass a pulse signal.

RADAR RECOGNITION AND IDENTIFICATION.

System using radar transmissions to which equipment, carried by friendly forces, automatically responds. It is the primary method of determining the friendly or unfriendly character of aircraft and ships by other aircraft or ships and by ground forces employing radar detection equipment and associated IFF units.

RADAR RECONNAISSANCE.

Use of radar (and radar scope photos) based on planes, naval vessels, and vehicles to procure information concerning the location, disposition, and strength of enemy air and sea units and terrain.

RADAR REFLECTION INTERVAL.

Length of time required for a radar pulse to travel from the source, taking the velocity of radio propagation to be equal to the velocity of light, 2.998×10^8 m/sec, or 299.8 m/microsec. Since the pulse must travel twice the distance to the target (out and back), the apparent velocities obtained are only one-half of the true velocity of the pulse. Likewise, the reflection intervals are twice as great when target ranges are considered. The following table, as calculated, takes into consideration both travel to the target and return:

Apparent velocity (travel/unit time)	
Radar Ranges	Reflection Intervals
149.9 m/micro-sec.	0.006671 micro-sec/m
491.8 ft/micro-sec.	0.002033 micro-sec/ft
163.9 yd/micro-sec.	0.006101 micro-sec/yd
0.0932 statute	10.735 micro-sec/
mi/micro-sec.	statute mile
0.0809 nautical	12.361 micro-sec/
mi/micro-sec.	nautical mile

RADAR REPEATER ADAPTER.

Unit which takes one video and trigger input and delivers several standard PPI video and

trigger outputs suitable for driving PPI repeaters.

RADAR REPORT.

Information about the position of friendly or enemy craft obtained with radar equipment.

RADAR SCAN PATTERN.

Pattern generated in space by the motion of a radar beam during one scanning cycle.

RADAR SCOPE.

Cathode-ray tube, serving as an oscilloscope, the face of which is the radar viewing screen.

RADAR SELECTOR SWITCH.

Manual or motor-driven switch which transfers a PPI repeater from one system to another, switching video, trigger, and bearing data.

RADAR SELF-SCREENING RANGE.

Range at which a target can be detected by a radar in the midst of its jamming mask, with a certain specified probability of detection.

RADAR SHADOWS.

Region obscured from the surveillance of a radar set by obstructions, either natural or artificial.

RADAR SIGNAL-TO-NOISE RATIO.

Ratio between echo height and average height of grass.

RADAR SILENCE.

Imposed discipline prohibiting the transmission by radar of electromagnetic signals on some or all frequencies.

RADAR TARGET.

Reflecting object of particular interest in the path of a radar beam.

RADAR TARGET ACQUISITION.

Antiaircraft artillery radar normally of lesser range capabilities, but of greater inherent accuracy, than that of the surveillance radar, whose normal function is to acquire aerial targets either by independent search or on direction from the surveillance radar, and to transfer these targets to tracking radars.

RADAR TARGET INTELLIGENCE.

Information that is necessary in order to select a visible radar aiming point and to plan and execute a radar bombing mission.

RADAR TEST SCOPE.

Combination synchroscope and oscilloscope provided with fast sweeps, which enables the examination of wave forms and voltages throughout the radar set.

RADAR TRACE.

Pattern produced on the fluorescent screen of the cathode-ray tube in a radar unit.

RADAR TRANSMITTER.

Unit of radar equipment in which the radio-frequency power for radar action is generated and keyed. Corresponds to radio transmitter in communications.

RADC (ROME AIR DEVELOPMENT CENTER).

RADCM (RADAR COUNTERMEASURES AND DECEPTION).

Includes all electronic countermeasures against radar.

RADIAC (RADIO ACTIVITY DETECTION, IDENTIFICATION, AND COMPENTATION).

RADIAC SET.

Portable, alpha-particle detector for use in decontamination work.

RADIAL.

Pertaining to, or placed like, a radius; hence, extending or moving outward from a central point like the spokes of a wagon wheel.

RADIAL COMPONENT.

Component acting along the radius, as contrasted to a tangential component that acts at right angles to a radius.

RADIAL GRATING.

Conformal wire grating consisting of wires arranged radially in a circular frame, like the spokes of a wagon wheel. The radial grating is placed inside a circular waveguide to obstruct E waves of zero order while passing the corresponding H waves.

RADIAL LEAD.

Lead extending from the side of a component rather than axially from the end. Resistors often have radial leads.

RADIAL-BEAM TUBE.

Vacuum tube producing a flat, radial beam of electrons that can be rotated about the axis of the tube by application of an external rotating magnetic field.

RADIAN.

Angle included within an arc equal to the radius of a circle. It is equal to $57^\circ, 17', 44.8''$.

RADIAN FREQUENCY.

Frequency expressed in radians per unit of time. It is equal to the frequency in cycles multiplied by 2π (Reference: ANGULAR FREQUENCY.)

RADIAN LENGTH.

Distance, in a sinusoidal wave, between phases differing by an angle of one radian. It is equal to the wavelength divided by 2π .

RADIAN PER SECOND.

Unit of angular velocity.

RADIANCY.

Radiant flux density of an element at the surface of a source of radiant energy.

RADIANT.

Emitted or transmitted by radiation.

RADIANT ENERGY.

Energy transmitted in the form of electromagnetic radiation, such as radio waves, heat waves, or light waves. It is measured in units of energy, such as kilowatt-hours, ergs, joules, or calories.

RADIANT FLUX.

Time rate of flow of radiant energy. It is expressed in watts or in ergs per second.

RADIANT HEAT.

Infrared radiation from a body that is at a temperature not quite high enough to cause visible radiation.

RADIANT HEATER.

Electric heating appliance having an exposed incandescent heating element.

RADIATE.

To emit rays from a center source, such as radio waves emanating from an antenna.

RADIATING CURTAIN.

Array of dipoles in a vertical plane, positioned to reinforce each other. It is usually placed one-quarter wave length ahead of a reflecting curtain of corresponding half-wave reflecting antennas.

RADIATING ELEMENT.

Basic subdivision of an antenna which in itself is capable of radiating or receiving radio-frequency energy.

RADIATING GUIDE.

Waveguide designed to radiate energy into free space. The waves may emerge through slots or gaps in the guide, or through horns inserted in the wall of the guide.

RADIATING POWER.

Time rate of emission of radiant energy in all directions per unit surface area of a radiating body at a given temperature. (Reference: EMISSIVE POWER.)

RADIATION.

1. Emission of energy in the form of electromagnetic waves. The term is also used to describe the radiated energy.
2. Corpuscular emissions, as alpha and beta radiation and emissions of mixed or unknown type, such as cosmic radiation.

RADIATION EFFICIENCY.

Ratio of the power radiated, to the total power supplied to the antenna at a given frequency.

RADIATION FIELD.

Electromagnetic field that breaks away from a transmitting antenna and radiates outward into space as electromagnetic waves (radio waves).

RADIATION FILTER.

Selectively transparent body which transmits only certain wave length ranges.

RADIATION INTENSITY.

Radiation intensity in a given direction is the

power radiated from an antenna per unit solid angle in that direction.

RADIATION PATTERN.

Diagram indicating the intensity of the radiation field of a transmitting antenna at a given distance away from the antenna in all directions. In the case of a receiving antenna, it indicates the response of the antenna to a signal having unit field intensity and arriving from different directions.

RADIATION POTENTIAL.

Voltage required to excite an atom or molecule and cause emission of one of its characteristic radiation frequencies.

RADIATION PYROMETER.

Instrument that measures extremely high temperatures by measuring the intensity of the radiation given off by a hot body.

RADIATION RESISTANCE.

1. Arbitrary term used to express the power radiated by an antenna.
2. Amount of resistance which, if inserted in place of the antenna, would consume the same amount of power that actually is radiated by the antenna.
3. Quotient of the power radiated by an antenna divided by the square of the antenna current referred to a specific point.

RADIATION SURVEY METERS.

Instrument that determines instantaneous radiation levels.

RADIATION TEMPERATURE

Temperature to which an ideal blackbody must be heated so it will have the same emissive power as the source of thermal radiation being considered.

RADIATIVE EQUILIBRIUM.

Maintenance of a constant temperature by absorption and emission of radiant energy at the same rates.

RADIATOR.

Part of an antenna system from which radio

RAD

waves are emitted. (Reference: RADIATING ELEMENT.)

RADIO.

1. Descriptive term applied to the use of electromagnetic waves between 10 kilocycles per second and 3,000,000 megacycles per second. (it is used principally as an adjective).

2 Communication by electromagnetic waves transmitted through space.

RADIO ALERT.

Message which is broadcast for the purpose of having radio stations leave the air and to, if required, enter into CONELRAD method of operation.

RADIO ALL-CLEAR.

Message which is broadcast by radio stations, including TV stations, to signify that CONELRAD alert has terminated.

RADIO APPROACH AIDS.

Equipment making use of radio to determine the position of an aircraft with considerable accuracy from the time it is in the vicinity of an airfield or carrier until it reaches a position from which landing can be carried out.

RADIO ATTENUATION.

For one-way propagation, radio attenuation is the ratio of the power delivered by the transmitter to the transmission line connecting it with the transmitting antenna, to the power delivered to the receiver by the transmission line connecting it with the receiving antenna.

RADIO AUTOCONTROL.

Control of an object by radio reference from itself to other objects.

RADIO BEACON.

Radio transmitter which emits a distinctive or characteristic signal used for the determination of bearings, courses, or location.

RADIO BEACON STATION.

Radio navigation station, the emissions of which are intended to enable a mobile station to determine its bearing or its direction in relation to the radio beacon station.

RADIO BEAM.

Radio transmission along a very narrow selected path.

RADIO BEARING.

Angle between the apparent direction of a definite source of emission of electromagnetic waves and a reference direction as determined at a radio direction-finding station. A true radio bearing is one for which the reference direction is that of true north. A magnetic radio bearing is one for which the reference direction is that of magnetic north.

RADIO BROADCAST.

Program of music and/or voice and other sounds broadcast from a radio transmitter for general reception.

RADIO BROADCASTING.

Radio transmission intended for general reception.

RADIO CAPACITOR.

Two electrodes, or sets of electrodes, separated from each other by an insulating material called the dielectric.

RADIO CHANNEL.

Band of frequencies sufficiently wide to permit radio communications.

RADIO CIRCUIT.

Radio system for carrying out one communication at a time in either direction between two points.

RADIO CIRCUIT DISCIPLINE.

Component of TRANSEC which includes the proper use of radio equipment, the adherence to prescribed frequencies and operating procedures, remedial action, net control, monitoring, and training.

RADIO COMMUNICATION.

Transmission by radio of writing, signs, signals, pictures, and sounds of all kinds.

RADIO COMMUNICATION GUARD.

Communication station designated to listen for

and record transmission and to handle traffic on a designated frequency for a certain unit or units.

RADIO COMMUNICATIONS COUNTERMEASURES.

Classified definition. (Reference: AFM 100-50.)

RADIO COMPASS.

Direction-finding radio set which provides indications concerning the bearings of radio transmitters with respect to a reference point.

RADIO CONTROL.

Control of a mechanism or other apparatus by radio waves.

RADIO COUNTERMEASURE.

Electronic countermeasure against radio. In some contexts, radio countermeasure refers to any countermeasure against electronic equipment, including both radio and radar. (Reference: ELECTRONIC COUNTERMEASURES, RADIO DECEPTION.)

RADIO DATA AND FLIGHT INFORMATION BOOK.

Publication containing graphic and tabulated information required by air crews in flight planning and flight which is of a stable nature and does not require frequent revision.

RADIO DECEPTION.

Employment of radio to deceive the enemy. Radio deception includes sending false dispatches, using deceptive headings, employing enemy call signs, etc.

RADIO DETECTION.

Detection of the presence of an object by radio-location without precise determination of its position.

RADIO DETECTOR.

Type of FM detector incorporating two diodes that conduct in opposite directions during alternate half-cycles. (Reference: DISCRIMINATOR.)

RADIO DIRECTION FINDER.

Radio receiving device that can be used to determine the line of propagation of radio waves.

RADIO DIRECTION FINDING.

Radio location in which only the direction of a station is determined by means of its emission.

RADIO DIRECTION-FINDING STATION.

Radio location station intended to determine only the direction of other stations by means of transmission from the latter.

RADIO DISCIPLINE.

Exact obedience to the rules for use of radio, especially in combat conditions where security is required.

RADIO DOPPLER.

Direct determination of the radial component of the relative velocity of an object by an observed radio frequency change due to such velocity.

RADIO ENGINEERING.

Field of engineering dealing with the generation, transmission, and reception of radio waves and with the design, manufacture, and testing of associated equipment. This definition includes television which is simply radio engineering extended to handle picture signals.

RADIO FACILITY CHART.

Chart of air routes in specific areas that shows the exact location of electronic aids to navigation, such as radio direction finder stations, radio and radar marker beacons, and radio range stations.

RADIO FADEOUT.

1. Phenomenon in radio propagation during which substantially all radio waves which normally penetrate to the E-region suffer partial or complete absorption.
2. Failure of radio waves to arrive at a location either because of magnetic storms, atmospheric disturbances, or other conditions along the transmission path.

RADIO FIELD INTENSITY.

Electric or magnetic field intensity at a given location associated with the passage of radio waves. It is commonly expressed in terms of the electric field intensity, in microvolts, or volts per

meter. In the case of a sinusoidal wave, the root-mean-square value is commonly stated. Unless otherwise stated, it is taken in the direction of maximum field intensity.

RADIO FIELD-TO-NOISE RATIO.

Ratio, at a given location, of the radio field intensity of the desired wave to the noise field intensity.

RADIO FILTER CENTER.

Central communications office of an aircraft warning service that gets reports on the movement of aircraft in an assigned area, sifts the information received, and sends it to the information centers.

RADIO FIX.

1. Determination of the position of the source of radio signals by obtaining cross bearings on the transmitter with two or more radio direction finders in different locations, then computing the position by triangulation.
2. Determination of the position of a vessel or aircraft equipped with direction-finding equipment by obtaining radio bearings on two or more transmitting stations of known location and then computing the position by triangulation.

RADIO FIXING AIDS.

Equipment making use of radio to assist a user to determine his geographical position.

RADIO FREQUENCY.

Frequency in which radio transmission is useful for communication purposes. The useful range is from approximately 10 kilocycles to 300,000 megacycles.

RADIO FREQUENCY AMPLIFICATION.

Amplification of a radio wave by a receiver before detection, or by a transmitter before radiation.

RADIO FREQUENCY AUTHORIZATIONS.

Consolidated radio frequency book containing radio frequency authorizations for all Air Force activities to which frequencies have been assigned by Headquarters, USAF.

RADIO FREQUENCY CHOKE.

Inductor which is used to impede the flow of radio-frequency currents; generally employing an air core or a pulverized iron core.

RADIO FREQUENCY COMPONENT.

Portion of a signal or wave which consists of only the RF alternations, and not including its audio rate of change in amplitude or frequency.

RADIO FREQUENCY DESIGNATIONS.

The following single letter designations are in general informal use in the United Kingdom, to indicate regions of operational frequencies rather than specific frequencies. These letters and no others may be used for designating the frequency or wave length regions as follows:

P =	200 MC per second	= 1.5 meter region
L =	1,000 MC per second	= 30 centimeter region
S =	3,000 MC per second	= 10 centimeter region
X =	10,000 MC per second	= 3 centimeter region
K =	30,000 MC per second	= 1 centimeter region
V =	50,000 MC per second	= 6 millimeter region

RADIO FREQUENCY RESISTANCE.

Resistance offered by a conductor to the flow of an RF current. (A conductor offers more resistance to HF currents than to IF or direct currents.) (Reference: SKIN EFFECT).

RADIO FREQUENCY SHIFT.

Modulation system where one radio frequency represents picture black and a radio frequency 800 cycles away represents picture white. Frequencies between these two limits represent shades of gray. The 800-cycle shift is standard for facsimile use, but other shifts may be used. Also used as the number of cycles difference in frequency between black and white frequency in a frequency shift modulation system. (Reference: FREQUENCY SHIFT).

RADIO FREQUENCY SUPPRESSOR.

Device to absorb radiated energy which might cause interference to radio reception.

RADIO FREQUENCY TRANSFORMER.

Transformer designed to transfer RF energy from one circuit to another. It may have either an air or small iron core depending on the frequencies to be handled.

RADIO HOMING AIDS.

Equipment permitting the use of radio to assist in the location of an area with sufficient accuracy to effect an approach.

RADIO HORIZON.

1. In radio wave propagation over the earth, the radio horizon is the line which bounds that part of the earth's surface reached by direct rays.

2. Focus of points at which direct rays from the transmitter become tangential to the earth's surface.

Note. Distance to the horizon is affected by atmospheric refraction. On a spherical surface, the horizon is a circle.

RADIO INTELLIGENCE.

Interception and interpretation of enemy radio transmissions.

RADIO INTERCEPT.

Use of radio sets to listen to enemy radio messages.

RADIO INTERFERENCE.

Undesired disturbance in reception, or that which causes the undesired disturbances. The interference may be caused by a disturbance in the transmitter, transmission medium, or the receiver.

RADIO JAMMING.

Blocking out radio communications by sending powerful interfering radio signals on the frequency to be blocked.

RADIO LANDING AIDS.

Equipment permitting the use of radio to assist an aircraft in carrying out its actual landing.

RADIO LANDING BEAM.

Distribution of radio waves, directional in the vertical plane, for the vertical guidance of aircraft during descent to a landing surface.

RADIO LAW.

Law governing radio communication in the United States is known as the Radio Act of 1927. It became a law February 23, 1927. Radio Communication is defined as an electrically transmitted message, signal, picture, communication, intelligence, or energy without the aid of connecting wires.

RADIO LOCATOR.

(Reference: RADAR (RADIO DETECTING AND RANGING).)

RADIO LOG.

Daily record of messages sent and received by radio, and other important information on the operation of a particular radio station. The log also includes a record of enemy attempts to join in or interfere with transmission.

RADIO MAGNETIC INDICATOR.

Dual indicator provided with an automatic means for stabilization of the rotatable scale to conform with the heading of the aircraft. It provides automatic and continuous indications of magnetic bearing, relative bearing, airplane heading, and drift, using signals from two fixed stations.

RADIO MARKER BEACON.

Radio navigation land station in the aeronautical radio navigation service which provides a signal to designate a small area above the station.

RADIO MARKER STATION.

Station marking a definite location on the ground as an aid to air navigation.

RADIO MAST.

Pole that supports a radio antenna.

RADIO METAL LOCATOR.

Instrument employing vacuum-tube circuits to detect the presence of metal within its operating range by a change in meter reading or a change in a signal heard in headphones. Extensively used for locating buried explosive mines,

buried pipe lines, buried metal objects, guns or other metal objects concealed on persons, metal embedded in logs about to be sawed, etc.

RADIO METEOROGRAPH.
(Reference: RADIOSONDE).

RADIO NAVIGATION.

1. Use, in navigation, of radio for the determination of position or direction, or for warning of obstruction.
2. Navigation by means of radio, radio compass, radio direction finding, etc.

RADIO NET.

System of radio stations operating with each other. A military net usually consists of a radio station of a superior unit and stations of all subordinate or supporting units.

RADIO NOISE FIELD INTENSITY.

Measure of the field intensity, at a point (as a radio receiving station) of electromagnetic waves of an interfering character. In practice, the quantity measured is not the field intensity of the interfering waves, but some quantity which is proportional, or bears a known relation to the field intensity.

RADIO PATH.

Route or direction of travel of any transmitted signal. Usually the shortest distance.

RADIO POSITION FINDING.

Locating the position of a radio station by using two or more direction finders and triangulating.

RADIO POSITION LINE DETERMINATION.

Determination of a position line by radiolocation. (Reference: POSITION LINE DETERMINATION).

RADIO POSITIONING LAND STATION.

Station in the radiolocation service, other than a radio-navigation station, not intended for operation while in motion.

RADIO POSITIONING MOBILE STATION.

Station in the radiolocation service, other than a radio navigation station intended to be used while in motion or during halts at unspecified points.

RADIO PROCEDURE.

Standardized methods used by radio operators to save time and prevent confusion.

RADIO PROSPECTING.

Use of radio equipment in various ways to locate mineral or oil deposits. Certain types of ore deposits can sometimes be located with a radio metal locator.

RADIO PROXIMITY FUSE.

Radio device contained in a missile to detonate it within predetermined limits of distance from a target by means of electromagnetic interaction with the target.

RADIO PULSE.

Intense burst of electromagnetic energy of split-second duration.

RADIO RANGE.

Radio transmitter that provides radial equisignal zones.

A-N. Radio range transmitter that establishes four equisignal zones with off course indication being furnished by the audible Morse Code letters A or N, and on-course indication being furnished by a merging of these signals into a continuous tone.

RADIO RANGE BEACON.

Radio navigation land station in the aeronautical radio navigation service providing radio equisignal zones.

RADIO RANGE LEG.

Space within which an on-course signal emanating from a radio range station may be received by aircraft.

RADIO RANGE MONITOR.

Instrument that automatically monitors the signal from a radio range beacon, giving a warning to attendants when the transmitter deviates a specified amount from its current bearings and transmitting a distinctive warning to approaching planes when trouble exists at the beacon.

RADIO RANGE STATION.

Radionavigation land station in the aeronautical

radio-navigation service providing radio equisignal zones. (In certain instances a radio range station may be placed on board ship).

RADIO RECEIVER.

Device for converting radio waves into perceptible signals.

RADIO RECEPTION.

Reception of messages, programs, or other intelligence by radio.

RADIO RECOGNITION.

Determination by radio means, of the friendly or enemy character, or the individuality of another.

RADIO RELAY SYSTEM.

Point-to-point radio transmission system in which the signals are received and retransmitted by one or more intermediate radio stations.

RADIO SET.

Radio transmitter, a radio receiver, or a combination of the two.

RADIO SHEILDING.

Metallic covering over all electric wiring and ignition apparatus, which is grounded at frequent intervals for the purpose of eliminating electric interference with radio communication.

RADIO SILENCE.

Period during which all or certain radio equipment capable of radiation is kept inoperative. (In combined or US Joint or Intra, the frequency bands and/or types of equipment affected will be specified).

RADIO SONO-BUOY.

Instrument designed to receive underwater sonic noises and retransmit them for radio reception.

RADIO SPECTRUM.

Entire range of frequencies in which useful radio waves can be produced. These frequencies have been classified into seven bands by the FCC as follows:

DESIGNATION	ABBR	FREQUENCY
very-low frequency	vlf	10 to 30 kc

low frequency	lf	30 to 300 kc
medium frequency	mf	300 to 3,000 kc
high frequency	hf	3 to 30 mc
very-high frequency	vhf	30 to 300 mc
ultra-high frequency	uhf	300 to 3,000 mc
super-high frequency	shf	3,000 to 30,000 mc

RADIO STATION.

Complete assemblage of equipment for radio transmission or reception, or both.

RADIO STATION INTERFERENCE.

Selective interference caused by the radio waves from a station or stations other than that from which reception is desired.

RADIO TECHNICAL COMMITTEE FOR AERONAUTICS.

Group, reporting to the Department of Commerce, that advances the art and science of aeronautics through the investigation of all available or potential applications of the telecommunications art, and fosters new communications developments to meet aeronautical operating requirements. Its committees represent both the military interest and US industry.

RADIO TECHNICIAN.

One qualified in all phases of repair and maintenance of radio equipment. Sometimes referred to as a radioman but the trend is away from this usage.

RADIO TELECONTROL.

Distant control of mechanisms or other apparatus by radio waves.

RADIO TELEGRAPHY.

Radio communication by means of the dots and dashes of the telegraphic code.

RADIO TELEPHONY.

Radio transmission and reception of the sounds of voice and music as in broadcasting. By means of radio telephony, it is possible to send and receive any sounds that might be handled by wire telephony.

RADIO TRANSMISSION.

Transmission of signals by means of radiated electromagnetic waves other than light or heat waves.

RADIO TRANSMITTER.

Device for producing radio-frequency power, for purposes of radio transmission.

RADIO TUBE.

General term covering any type of electron tube that may be used in electronic equipment.

RADIO WATCH.

Service performed by a qualified operator when on duty in the radio room of a vessel listening for signals of other stations on the international calling and distress frequency of 500 kilocycles, and at all other times when such operator is engaged in transmitting or receiving signals or messages on any authorized frequency, to or from any station in the maritime mobile service, or in receiving from any station time signals, weather reports, hydrographic reports regarding aids to navigation, authorized press material of life or property at sea. (Reference: WATCH).

RADIO WAVE.

Electromagnetic wave produced by rapid reversals of current in a conductor. Such a wave travels through space at approximately the speed of light.

RADIO WAVE PROPAGATION.

Transfer of energy by electromagnetic radiation at radio frequencies.

RADIO WAVE-FRONT DISTORTION.

Change in the direction or advance of a radio wave.

RADIO WAVES.

Electromagnetic waves of frequencies between 10 kc per second and 3,000,000 mc per second.

RADIO-FREQUENCY ALTERNATOR.

Rotating type generator for producing radio-frequency power.

RADIO-FREQUENCY AMPLIFIER.

Vacuum-tube amplifier stage or section used to increase the voltage or power of radio-frequency signals.

RADIO-FREQUENCY CURRENT.

Alternating current having a frequency higher than 10,000 cycles.

RADIO-FREQUENCY OSCILLATOR.

Oscillator that generates alternating current at radio frequencies.

RADIO-FREQUENCY PULSE.

Radio-frequency carrier amplitude-modulated by a pulse. The amplitude of the modulated carrier is zero before and after the pulse.

Note. Coherence of the carrier (with itself) is not implied.

RADIO-FREQUENCY SIGNAL GENERATOR.

Test instrument that can be used to generate the various radio-frequency signals required for alignment and servicing of radio equipment. (Reference: SERVICE OSCILLATOR).

RADIO-FREQUENCY TRANSFORMER.

Transformer for use with radio-frequency currents. Usually of air core or small iron core construction, depending on the frequencies to be handled.

RADIO-INERTIAL GUIDANCE.

Missile or space weapon guidance system that is divided into two major groups; the onboard guidance system and the flight-control system, and the ground-located guidance station.

RADIO-TELEPHONY.

Two-way voice communication (telephony) carried on by means of radio waves.

RADIOACOUSTIC POSITION FINDING.

Method of determining distance through water by closing a radio circuit at the instant that a charge is exploded under water at one point and calculating the distance to the observing station from the time difference between the arrival of the radio signal and the sound of the explosion transmitted through water.

RADIOACOUSTICS.

Study of the production, transmission, and reproduction of sounds carried from one place to another by radio-telephony.

RADIOACTINIUM.

Radioactive element formed by the disintegration of actinium. It has an atomic number of 90 and is isotopic with thorium.

RADIOACTIVATE.

To make radioactive.

RADIOACTIVE.

Pertaining to or indicating radioactivity.

RADIOACTIVE CONSTANT.

Constant associated with a particular substance, determining its rate of disintegration.

RADIOACTIVE EMANATION.

Disintegration product of a radioactive material. It forms a radioactive deposit on any solid object exposed to it.

RADIOACTIVE EQUILIBRIUM.

Relationship between a radioactive substance and its parent substance, in which at any instant the rate of disintegration of the former is equal to its rate of formation from the latter. The equilibrium is transient if the balanced rates change rapidly, and secular if the parent substance has a very long period.

RADIOACTIVE FAMILIES.

Elements which are the product of radioactive decay of disintegration of a parent substance.

RADIOACTIVE PRODUCT.

Substance resulting from radioactive disintegration of a parent substance.

RADIOACTIVE SERIES.

Succession of radioactive elements, each of which is derived from the disintegration of the one preceding. The final element in the series is non-radioactive and is known as the end product.

RADIOACTIVE TRANSFORMATION.

Changing one chemical element into another through radioactivity.

RADIOACTIVITY.

Property of certain elements which causes their atomic nuclei spontaneously to disintegrate, gradually transmitting the original elements into stable isotopes of that element or into another

element of different chemical properties. The process is accomplished by the emission of one or more radiations, such as alpha particles, beta particles, gamma rays or positrons.

RADIOGENIC.

Reproduced as a product of radioactivity.

RADIOGONIOMETER.

Part of a radio direction finder. In the Bellini-Tosi system, two loop antennas positioned at right angles to each other are connected to two field coils in the radiogoniometer. Bearings are obtained by a rotatable search coil that is inductively coupled to the field coils.

RADIOGRAM.

1. X-ray pattern produced by crystal diffraction.
2. Wireless telegraph message.

RADIOGRAPHY.

Examination of materials usually metallic by means of X-rays or gamma rays and subsequent action of the transmitted rays on a photographic film.

RADIOISOTOPE.

Elements which, by nuclear radiation, have the same atomic number but different atomic weight.

RADIOLOCATION.

Determination of relative direction, position, or motion of an object, or its detection, by means of the constant velocity or rectilinear propagation characteristics of radio waves.

RADIOLOCATION SERVICE.

Service involving the use of radiolocation.

RADIOLOCATION STATION.

Station in the radiolocation service.

RADIOLOGICAL AXIS.

Line drawn from the center of burst along the mean line of average wind direction.

RADIOLOGIST.

X-ray technician.

RADIOLOGY.

Branch of physics which deals with X-ray, radioactivity, and other high frequency radiation.

RADIOLUMINESCENCE.

Luminescence produced by radiant energy, as by X-rays, radioactive emissions, alpha particles, or electrons.

RADIOMAN.

Specifically, a radio operator. The trend is to differentiate between the radioman, who is a radio operator, and the radio technician, who services and maintains radio equipment.

RADIOMATERIOLOGY.

Examination of material for interior cracks and flaws by means of X-rays.

RADIOMETALLOGRAPHY.

Examination of the crystalline structure and other characteristics of metals and alloys with X-ray equipment.

RADIOMETEOROGRAPH.

Meteorograph which, when carried into the stratosphere by an unmanned, gas-filled, rubber balloon, automatically reports atmospheric conditions by radio as it ascends into the stratosphere. The ultra-high-frequency signals are so transmitted that they can be recorded and interpreted in terms of pressure, temperature, and humidity. (Reference: RADIOSONDE).

RADIOMETRY.

Measurement of radiation, as with a radiometer.

RADIOMICROMETER.

Sensitive instrument for measuring radiant energy by allowing the radiation to fall on a thermojunction that forms part of the moving system of a galvanometer. The deflection is a measure of the radiation.

RADIONAVIGATION LAND STATION.

Station in the radionavigation service not intended for operation while in motion.

RADIONAVIGATION MOBILE STATION.

Station in the radionavigation service intended to be used while in motion or during halts at unspecified points.

RADIONAVIGATION SERVICE.

Radiolocation service involving the use of radionavigation.

RADIONAVIGATION STATION.

Station in the radionavigation service.

RADIOPAQUE.

Not penetrable by X-rays or other forms of radiation.

RADIOPHARE.

Identical with radio beacon and commonly used in international terminology.

RADIOPHONE.

1. Radio transmitter or receiver, or both combined, used for radiotelephony.
2. Apparatus for producing sound through the action of radiant energy.

RADIOPHOTO.

1. Transmission by radio of photographs, drawings, typewritten and printed material.
2. Process of transmitting photographs on a radio circuit by a facsimile system.

RADIOPHOTOGRAM.

Photograph transmitted by radio.

RADIOPHOTOGRAPHY.

Transmission of photographs by radio.

RADIOSENSITIVE.

1. Sensitive to radiant energy.
2. Capable of being injured or destroyed by radiant energy, as by X-rays.

RADIOSONDE.

Automatic radio transmitter in the meteorological aid service, usually carried on an aircraft, free balloon, kite, or parachute, which transmits meteorological data.

RADIOSONDE STATION.

Station in the meteorological aid service employing radiosonde.

RADIOSONIC.

Using radio waves for sounding purposes.

RADIOTECHNOLOGY.

1. Application of any form of radiation to industrial processes.
2. Application of X-rays to industry.
3. Practical art of radio.

RADIOTELEGRAM.

Telegram originating in, or intended for a mobile station, transmitted on all or part of its route over the radiocommunication channels of a mobile service.

RADIOTELEGRAPH TRANSMITTER.

Radio transmitter that is capable of handling code signals.

RADIOTELEGRAPHY.

Radio communication by dot-dash code.

RADIOTELEPHONE.

Complete radio transmitter, radio receiver, and associated equipment required at one station for radiotelephony.

RADIOTELEPHONE DISTRESS SIGNAL.

Word MAYDAY corresponding to the French pronunciation of the expression, m'aidez, spoken under the same conditions that the signal SOS would be transmitted in code by radiotelegraphy.

RADIOTELEPHONE TRANSMITTER.

Radio transmitter capable of handling audio-frequency modulation, such as voice and music.

RADIOTELETYPE.

1. Teletype or teletypewriter actuated by radio impulses.
2. Communication system employing this device.

RADIOTHERAPY.

Treatment of disease by the application of roentgen rays or the rays from radioactive substances.

RADIOTRANSSPARENT.

Permitting passage of X-rays or other forms of radiation.

RADIOVISION.

Early name for television.

RADIOVISOR.

1. Early name for a device that reconstructs the image in a television receiver.
2. Name adopted, in Great Britain, for photoelectric illumination controls, photoelectric burglar alarms, and similar photoelectric relay devices.

RADIST.

Radionavigation system, in which the comparison of arrival times of transmitted pulses, at three or more ground stations, indicates the position of the vehicle. It is used for air and marine navigation tracking, marine geophysical surveying, chartmaking, meteorological studies, and other applications requiring accurate tracking and plotting.

RADIUM.

Highly radioactive, metallic element that gives off three kinds of radiation: alpha rays, beta rays, and gamma rays. The radioactivity is an atomic property resulting from disintegration of the radium atom. Symbol, Ra; atomic number, 88.

RADIUM THERAPY.

Treatment of disease by the use of radium or its emanations.

RADIUS.

Distance from the center of a circle or arc to the circumference.

RADIX.

Synonym for base.

RADOME.

Weatherproof cover, transparent to RF energy, for a primary radiating element or antenna system.

RADON.

Gaseous radioactive product, the heaviest of the noble gases, formed by the disintegration of radium. It is used in the nonsurgical treatment of cancer.

RAF (ROYAL AIR FORCE).

1. Name of the Air Force of Great Britain. Does not include the Air Forces of British dominions and commonwealths.
2. Often used with an identifying proper name to designate the Air Force.

RAID.

Consolidation of a number of hostile tracks into a single, summarized display.

RAIL PILING.

Support at the bottom of a panel on which the jack strips are laid or piled. It is also generally drilled for mounting the supervisory lamps associated with the panel or position equipment.

RAILINGS.

Radar pulse jamming at high recurrence rates (50 to 150 kc/s). It results in an image on a radar indicator resembling fence railings.

RAINTIGHT.

So constructed or protected that exposure to a beating rain will not result in the entrance of water.

RAKED POLE.

Pole leaning from a perpendicular position.

RAM (ARADAR ABSORBING MATERIAL).

RAMARK.

Fixed facility which continuously emits a radar signal so that a bearing indication appears on a radar display.

RAMSAUER EFFECT.

Absorption of slow-moving electrons by intervening matter.

RANDOM.

Irregular, of no set pattern.

RANDOM NOISE.

Noise which comprises transient disturbances occurring at random. The term is most frequently applied to the limiting case where the number of transient disturbances per unit time is large, so that the spectral characteristics are the same as those of thermal noise. Thermal noise and shot noise are special cases of random noise.

RANDOM PULSING.

Continuous, varying, pulse-repetition rate, accomplished by noise modulation or continuous frequency change.

RANDOM WINDING.

Winding in ac machines; the conductors are placed, one by one, in prepared slots and the end connections are separately insulated. (Reference: MUSH WINDING.)

RANDOMIZED JITTER.

Jitter by means of noise modulation.

RANGE.

1. Maximum distance at which a radar or radio transmitter is useful.
2. Difference between the maximum and minimum values of a variable component.
3. Fraction of a perfect signal element through which the time of selection may be varied so as to occur earlier or later than the normal time of selection, without causing errors while signals are being received. The range of a printing telegraph receiving device is commonly measured in percent of a perfect signal element by adjusting the indicator.
4. Upper and lower limits through which the index arm of the range-finder mechanism of a teletypewriter may be moved and still receive correct copy.
5. Number of straight line miles between any two points, such as a radar and a target, usually measured in yards or nautical miles. A nautical mile is 6080.27 feet, but for convenience in radar and navigation, the nautical mile is said to be 6,000 feet, or 2,000 yards long.
6. Distance over which a signal can be transmitted for effective reception; or, the distance at which a usable signal can be received.

RANGE BUZZER.

Circuit to remote indicator for calling attention to range transmission.

RANGE CALIBRATION.

Adjustment of radar range indications by use of known range targets or delayed signals, so that when ON TARGET, the radar set will indicate the correct range.

RANGE CODING.

Method of coding a beacon response in which the reply consists of a group of pulses extending out in range of the beacon. The coding lies in the arrangement of these pulses as they show on a radar or beacon scope.

RANGE FINDER.

Movable, calibrated unit of the receiving mechanism of a teletypewriter by means of which the selecting interval may be moved with respect to the start signal.

RANGE GATE.

Gate voltage used to select radar echoes from a very short range interval.

RANGE GATE STEALING.

Classified definition. (Reference: AFM 100-50.)

RANGE LIGHTS.

Lights installed to indicate a preferred landing path, and so identified that they can be used for ranging, mainly to link the aircraft with the preferred landing path.

RANGE MARK.

One of a series of marks on a radar indicator scope that indicate distance from the radar set.

RANGE MARK OFFSET.

Displacement of range mark on a type B indicator.

RANGE MARKER.

Variable or movable discontinuity in the range time base of a radar display (in the case of a PPI, a ring) for measuring the range of an echo or for calibrating the range scale.

RANGE MARKERS.

Indications on the screen of a radar indicator which divide the range scale into accurately known intervals for range determination, or for checking against mechanical indicating dials, scales, or counters.

RANGE MARKS.

Pips, or complete tracers, superimposed on the video signal and supplied to a cathode-ray tube at specific intervals. They are used for calibration purposes.

RANGE RATE MEMORY.

Classified definition. (Reference: AFM 100-50.)

RANGE RESOLUTION.

Minimum range separation between two targets on the same line of bearing that will allow an

operator to obtain data on either individual target.

RANGE RING.

Accurate, adjustable, ranging mark on a PPI corresponds to a range step on a type-M indicator. (Reference: RANGE MARKER.)

RANGE SELECTION.

Control for selection of range scale.

RANGE STEP.

Vertical displacement on M-indicator sweep to measure range.

RANGE UNIT.

Radar-system component used for control and indication (usually counters) of range measurements.

RANGE ZERO.

Alignment of start of sweep trace with zero range.

RANGE-AMPLITUDE DISPLAY.

Radar display in which a time base provides the range scale from which echoes appear as deflections normal to the base.

RANGE-BEARING DISPLAY.

Type of presentation on a radar indicator in which the signal appears as a bright spot, with bearing as the horizontal coordinate and range as the vertical coordinate. (Reference: TYPE B DISPLAY.)

RANGE-HEIGHT DISPLAY.

Radar display which shows an echo as a bright spot on a rectangular field, slant range being indicated along the X-axis, height above the horizontal plane being indicated (on a magnified scale) along the Y-axis, and height above the earth being shown by a cursor. (Reference: RANGE-HEIGHT INDICATOR.)

RANGE-HEIGHT INDICATOR.

Radar display which shows an echo as a bright spot on a rectangular field, slant range being indicated along the X-axis, height above the horizontal plane being indicated (on a magnified scale) along the Y-axis, and height above the earth being shown by a cursor. (Reference: RANGE-HEIGHT DISPLAY.)

RAPCON (RADAR APPROACH CONTROL).

Use of radar for the direct control of aircraft within a given area. Usually, two types of radar equipment are employed. One is an air surveillance radar such as the AN/SPN-18 for control of the aircraft from the time it enters the control zone until it approaches the landing field. The other is a precision-approach radar such as the AN/FPN-16 for control of the aircraft during its approach to the runway. The AN/FSA-4 control and monitoring equipment has been developed to provide control, coordination, and communications facilities for RAPCONs.

RARE GAS.

One of a group of chemically inert gases, including radon, argon, helium, krypton, neon, and xenon. (Reference: NOBLE GAS.)

RASCAL.

Air-to-surface, rocket-powered guided missile developed for the Air Force. The nomenclature is GAM-63. It is 20 feet long and 4.5 feet in diameter. The missile can carry an atomic warhead, has a maximum speed of Mach 1.5, and a range of 100 miles. It receives guidance from the launching plane during its target run.

RASTER.

Predetermined pattern of scanning lines which provides substantially uniform coverage of an area.

RASTER SCAN.

Very similar to electron-beam scanning in an ordinary television set. A horizontal sector scan that changes in elevation.

RATE.

Measure of movement per unit of time. For example: climb, closure, descent, turn.

RATE OF CHANGE OF BEARING.

Rate at which a bearing is changing with respect to time, as a result of relative motion between a target and the position of a tracking radar antenna. (Reference: BEARING RATE, AZIMUTH RATE.)

RATE OF DECAY OF SOUND-ENERGY DENSITY.

Time rate at which the sound-energy density is decreasing at a given point and at a given time. The practical unit is the decibel per second.

RATE OF FALL.

Classified definition. (Reference: AFM 100-50.)

RATE OF FALL.

Speed of descent of window, under average conditions, measured in feet per minute.

RATE-OF-CHANGE PROTECTION.

Effect of equipment operative in conformance with the rate of change of current, voltage, power, etc., to cause and maintain the interruption of power in the circuit. In alternating current circuits, the quantities are in RMS values.

RATE-OF-CHANGE RELAY.

Relay which functions in conformance with the rate of change of current, voltage, power, etc.

RATE-OF-RISE FIRE ALARM THERMOSTAT.

Fire alarm thermostat designed to operate when the rate of temperature increase exceeds a predetermined value.

RATED KVA OF TRANSFORMER.

Output which can be delivered for the time specified at rated secondary voltage and rated frequency without exceeding the specified temperature limitations.

RATED KVA TAP.

Tap, through which the transformer can deliver its rated KVA output without exceeding the specified temperature rise.

RATED OUTPUT.

Output power, voltage, current, etc., at which a machine, device, or apparatus is designed to operate under specified normal conditions.

RATED PRIMARY VOLTAGE OR CONSTANT-CURRENT TRANSFORMER.

Primary voltage for which the transformer is designed.

RATED PRIMARY VOLTAGE OF CONSTANT-POTENTIAL TRANSFORMER.

Rated secondary voltage multiplied by the turn

ratio in the case of a step-down transformer, or divided by the turn ratio in the case of a step-up transformer.

RATED SECONDARY CURRENT OF CONSTANT-CURRENT TRANSFORMER.

Secondary current for which the transformer is designed.

RATED SECONDARY CURRENT OF CONSTANT-POTENTIAL TRANSFORMER.

Secondary current obtained by dividing the rated KVA by the rated secondary voltage.

RATED SECONDARY VOLTAGE OF CONSTANT-POTENTIAL TRANSFORMER.

Secondary voltage at which the transformer is designed to deliver rated KVA.

RATING.

Designated limit of operating characteristics based on definite conditions.

Note. Such operating characteristics as load, voltage, frequency, etc., may be given in the rating.

RATING GROUNDING TRANSFORMER.

Rating, determined by the current in the neutral, for a specified time when one conductor is solidly grounded and the supply voltage is sustained.

RATING OF INSTRUMENT.

Designation assigned by the manufacturer to indicate its operating limitations. (The full-scale marking of an instrument does not necessarily correspond to its rating.)

RATING OF RELAY.

Designated limit of its operating characteristics based on definite conditions. The rating is expressed in terms of voltage, current and frequency.

RATING OF STORAGE BATTERIES.

Expressed as the number of ampere hours which they are capable of delivering when fully charged and under specified conditions as to temperature, rate of discharge, and final voltage.

RATIO.

Value obtained by dividing one number by another, indicating their relative proportions.

DEVIATION. Ratio of the maximum frequency deviation, in a frequency-modulation system, to the maximum modulating frequency of the system under specified conditions.

FRONT-TO-BACK. 1. Ratio, in a directional antenna, of the maximum radiation in the desired direction to the maximum radiation in the opposite direction.

2. Ratio, in a crystal rectifier, of the resistance to current flowing in the normal direction to the resistance in the opposite direction.

IMAGE. Ratio, in a heterodyne receiver, of the image-frequency signal input at the antenna to the desired signal input for identical outputs.

INTERMEDIATE-FREQUENCY RESPONSE.

Ratio, in a heterodyne receiver, of the intermediate-frequency signal input at the antenna to the desired signal input for identical outputs.

PROPAGATION. Vector ratio, in a wave propagated from one point to another, of the electric or magnetic intensity at the second point to that at the first point.

SIGNAL-TO-NOISE. 1. Ratio of the magnitude of the signal to that of the noise; often expressed in decibels. This ratio is expressed in many different ways; for example, in terms of root-mean-square values in the case of random noise, the signal being assumed sinusoidal. In specific cases, other measures of signal and noise may be used, if clearly stated.

2. In television transmission, signal-to-noise ratio at any point is the ratio in decibels of the maximum peak-to-peak voltage of the video television signals, including synchronizing pulse, to the root-mean-square voltage of the noise. Television transmission signal-to-noise ratio is defined in this way because of the difficulty of defining the RMS value of the video signal or the peak-to-peak value of random noise.

STANDING-WAVE. Ratio of the amplitude of a standing wave at an antinode to the amplitude at a node.

WIDE-BAND. Ratio, of a system, of the occupied frequency band to the intelligence bandwidth.

RATIO ARMS.

Two adjacent arms of a Wheatstone bridge, having adjustable resistance so arranged that the two arms can be set to have any of several fixed ratios to each other.

RATIO DETECTOR.

Type of FM detector incorporating two diodes that conduct in opposite directions during alternate half-cycle. (Reference: DISCRIMINATOR.)

RATIO OF TRANSFORMATION.

Ratio of the secondary voltage of a transformer to the primary voltage under no-load conditions, or the corresponding ratio of currents in a current transformer.

RATIO OF TRANSFORMER.

Turns ratio of a transformer, unless otherwise specified.

RATIOMETER.

1. Instrument for measuring the ratio of transformation of a transformer by means of a resistance-bridge arrangement.
2. Moving-coil type of instrument in which the deflection is proportional to the ratio of the currents sent through two coils.

RATO (ROCKET ASSISTED TAKEOFF).

Aircraft takeoff with assistance of rocket units or similar device.

RATT (RADIO TELETYPE).

1. Teletype or teletypewriter actuated by radio impulses.
2. Communication system employing this device.

RAVEN.

AN/ARQ-6.

RAW RADAR DATA.

Radar data, prior to being quantized by either AN/FST-1 or AN/FST-2 equipment.

RAWINSONDE.

System consisting of a Rawin set which automatically tracks a balloon-borne, radiosonde transmitter. The Rawin set is essentially an electronic theodolite and radiosonde receiver having a directional antenna. The angles of azimuth and elevation of the antenna and the height of the balloon, as determined by the radiosonde recorder, determine the position of the balloon. Changes in the computed position of the balloon over a given time are indicative of the wind velocity and direction. In addition, the Rawin set receives a pulse modulated RF signal from the radiosonde, amplifies and detects this signal, and passes the detected signal to a meteorological recorder. The meteorological recorder translates the detected signal into graphical functions of pressure, temperature and humidity.

RAWOL (RADAR WITHOUT LINE-OF-SIGHT).

This term is used to describe the detection, by ground radar, of targets below line of sight or when low hills intervene between target and radar. This coverage is believed to be due partly to diffraction. (Reference: AFM 100-50.)

RAY OF LIGHT.

Single element of light, propagated in a straight line and having an infinitesimally small cross section; used for tracing the path of light through an optical system.

RAY PATH.

Straight, geometric path between the transmitting and receiving location.

RAYCOM.

Large, general-purpose, digital computer manufactured by Raytheon Mfg. Co. Ferrite-Core Matrices for rapid-access memory are used in this computer. The cores are tiny doughnuts of sintered ferrite material. A matrix of ferrite cores is about the size of a postage stamp. A total of 104,000 ferrite cores are used. These can store 2000 words with an access time of 0.01 milliseconds. The computer contains 2000 electron tubes. Magnetic tape is used for storage purposes.

RAYLEIGH DISTRIBUTION.

Frequency distribution for an infinitely large

number of quantities of the same magnitude, but of random phase relationships. Sky-wave field intensities follow the Rayleigh distribution for one-minute or smaller time intervals.

RAYLEIGH LINE.

Spectrum line in scattered radiation which has the same frequency as the corresponding incident radiation. It arises from ordinary or Rayleigh scattering, not from the Compton effect or the Raman effect.

RAYLEIGH RECIPROCITY THEOREM.

Reciprocal relationship for an antenna when it is transmitting or receiving. The effective heights, radiation resistance, and the radiation pattern are alike, whether the antenna is transmitting or receiving.

RAYLEIGH SCATTERING.

Selective scattering of radiation by very small particles suspended in air, as by dust.

RAZON.

Four-directional, radio-controlled missile. (Reference: AZON.)

RAZOR.

Mark X, IFF facility which gives range and azimuth-information accuracy.

RBS (RADAR BOMB SCORING).

System or procedure in which ground-based radar and plotting equipment is used to aid in determining the theoretical point or points of impact in a simulated bombing mission.

RC.

International Telecommunications Union designation for nondirectional radio beacon.

RC (RUBBER COVERED).

Used to identify rubber-covered cable wire.

RCB (RUBBER-COVERED BRAIDED).

Used to identify rubber-covered braided cable wire.

RC CONSTANT.

Time constant of a resistor-capacitor circuit; equal in seconds to the resistance value in ohms multiplied by the capacitance value in farads.

RC COUPLING.

Resistor-capacitor coupling between two circuits.

RC NETWORK.

Circuit containing resistances and capacitances arranged in a particular manner to perform a specific function.

RC OSCILLATOR.

Oscillator in which the frequency is determined by resistance and capacitance elements.

RCA BIZMAC.

Electronics business system utilizing magnetic tape for automatic file storage. An appropriate equipment complement for a given system is selected from the following five major groups of items:

1. **SYSTEM CENTRAL.** System control consists of a master console and switching unit and an interrogation unit.

2. **MAGNETIC TAPE FILE STORAGE.** Magnetic tape file storage consists of an average of two million characters per reel.

3. **INPUT EQUIPMENT.** Input equipment consists of a tape-writer and tape-writer verifier, which are keyboard devices similar to typewriters. Each tape-writer produces page copy and punched paper tape in BIZMAC code. BIZMAC code is six binary code bits and one parity check bit. The characters contained in such a code consist of: 10 Arabic numerals; 26 letters of the English alphabet; 16 special symbols and punctuation marks; and, 7 BIZMAC control codes. A paper-tape transcriber transcribes paper tape to magnetic tape, and handles the output of 25 to 30 tape-writer operators. Other output equipment includes: a paper-tape decoder, which converts five-channel, teletype paper to seven-channel, BIZMAC paper tape; a card transcriber, which converts IBM cards to magnetic tape, reads each card twice, and compares at 200 cards per minute, handles 10 split columns, and accomplishes data rearrangement; and, other special devices.

4. **DATA PROCESSING EQUIPMENT.** Such equipment consists of a computer and one or more sorters. The computer is a general-purpose,

stored-program, alpha-numerical, business computer having the following operation codes: algebraic decimal add, subtract, and multiply; division by program sub-routine; binary add and subtract; transfer control and conditional transfer; tape control-read-in, write-out, back-up; block and variable-length data transfer; set-up and refer for calling subroutines; and, variable item and message length data with all characters of the BIZMAC code handles. The internal memory of the computer consists of magnetic cores and drum memory. Total characters, 18,000 to 36,000. The high-speed memory consists of magnetic cores, two banks of 1024 or 2048 characters each, having an access time of 20 microseconds with 2 characters handled in parallel. The drum memory has a read-write speed of 50,000 characters per second in each of two channels, with an average access of 5.2 milliseconds. Each drum has a capacity of 16,368 characters, addressable in groups of four characters and may be used to store 2046 three-address instructions. The operation rates for five-digit numbers are as follows: addition, 0.540 milliseconds; subtraction, 0.540 milliseconds; multiplication, 5.300 milliseconds; division, 22,000 milliseconds; and, tape read-write, 10 milliseconds plus 0.1 millisecond per character. A sorter is a special-purpose computer for more economically accomplishing file maintenance. The sorter sorts into ascending sequence, merges, and extracts and accomplishes file maintenance by merging in new accounts, substituting posted messages for old reference messages, and deleting any obsolete accounts while, at the same time, extracting by list the next set of active reference messages.

5. OTHER EQUIPMENT. Output equipment consists of an electromechanical printer, an electronic printer with camera and film processer, a magnetic-tape transcriber, a paper-tape coder, an interrogation printer, and a document printer. The electromechanical printer prints data properly edited by the computer and recorded on magnetic tape. The data is printed on sprocket-fed, fanfold, single or multiple-sheet paper or multilith master and prints at a rate of 600 lines per minute and skips at 1800 lines per minute.

RCAF (ROYAL CANADIAN AIR FORCE).

Name of the Air Force of the British Dominion of Canada.

RCBWP (RUBBER-COVERED, BRAIDED, WEATHERPROOFED).

Used to identify rubber-covered, braided, weatherproofed cable wire.

RCC (RESCUE CONTROL CENTER).

Unit, subordinate to a safety center, which directs search and rescue activities.

RCI (RADAR COVERAGE INDICATOR).

Device showing how far a given aircraft should be tracked by a radar station, and also provides a reference (detection) range for quality control. The device takes into account aircraft size, altitude, screening angle, site elevation, type of radar, antenna radiation pattern, and antennas tilt.

RCN (ROYAL CANADIAN NAVY).

Name of the Navy of the British Dominion of Canada.

RCVR (RECEIVER).

1. Device or set of equipment for receiving electric current, radio waves, etc., and converting the current or waves into some usable form.
2. Basic unit of a firearm to which the barrel and other components are attached.

RCS (REPORTS CONTROL SYMBOL).

Symbol that identifies a report as being authorized and approved in accordance with the reports control system.

RCWP (RUBBER-COVERED, WEATHERPROOFED).

Used to identify rubber-covered, weatherproofed wire cable.

RD

1. Absorption index for a route longer than 4000 kilometers.
2. International Telecommunications Union designation for direction radio beacon.

R&D (RESEARCH AND DEVELOPMENT).

Term applied to scientific research, relative to national security.

RDB (RESEARCH AND DEVELOPMENT BOARD).

Board established by the National Security Act of 1947 to advise the Secretary of Defense as to the status of scientific research, relative to the national security, and to assist him in assuring adequate provision for research and development on scientific problems relating to national security.

RDF (REFLECTION DIRECTION FINDING).

British term for radar.

RDO (RADIO).

1. Use of electromagnetic waves to transmit or receive electric impulses or signals without a connecting wire.
2. The transmission or reception of electric impulses or signals.
3. Message sent by radio.

RE-ACQUISITION TIME.

Time required for an operating, tracking radar to relock the radar on the target after the automatic tracking mechanism has been disengaged.

RE-ADDRESS.

Indicate new address by the addition of a supplementary heading to the original message or by additional instructions without change in the address or text.

RE-ENCIPHER.

To encipher the plain text, or paraphrased version thereof, or code text more than once; opposed to superencipherment in which cipher text is enciphered.

RE-ENCODE.

To encode the same plain text, or paraphrased version thereof, more than once.

RE-ENCRYPT.

To encrypt the plain text, or a paraphrased version thereof, or code text more than once.

RE-ENTRANT WINDING.

Armature winding that returns to its starting point, thus forming a closed circuit.

RE-RING LOCKED IN.

Universal cord circuit feature by which, on mag-neto lines, the called or calling party may re-ring the operator, causing the supervisory lamps of the cord circuit to remain lighted until the operator answers.

REACTANCE.

Electrical characteristic, outside of resistance, which impedes the flow of alternating current in a circuit. Measured in ohms.

REACTANCE COIL.

Inductive reactance, used to oppose the flow of an alternating current. A choke coil.

REACTANCE GROUNDED.

Grounded through a reactance.

REACTANCE MODULATOR.

Device, the reactance of which may be varied in accordance with the instantaneous amplitude of the modulating wave applied. Electron tubes are widely used in this manner to effect phase or frequency modulation.

REACTANCE RELAY.

Form of impedance relay, the operation of which is a function of the reactance of the circuit.

REACTANCE TUBE.

1. Vacuum tube used to change the reactance of a circuit.
2. Color television section which utilizes correction voltage from phase detector to control sub-carrier oscillator frequency.

REACTANCE-TUBE MODULATOR.

Modulator used in the Crosby system of frequency modulation, in which the modulator tube is made to act as a varying reactance in the oscillator circuit.

REACTION.

1. Another name for regeneration in electronics.
2. Chemical or nuclear change.

REACTION TIME.

Time required to intercept and destroy an enemy weapon prior to reaching its target.

REACTIVATION OF A FILAMENT.

Application of a higher than normal voltage to a thoriated filament for a few seconds to bring a fresh layer of thorium atoms to the filament surface and thereby improve electron emission.

REACTIVE.

Pertaining to either inductive or capacitive reactance. A reactive circuit has a high value of reactance in comparison with resistance.

REACTIVE FACTOR.

Ratio of reactive power to total power in a circuit.

REACTIVE FACTOR METER.

Instrument for measuring reactive factor.

REACTIVE LOAD.

Load having reactance, such as a capacitive load or an inductive load, rather than a resistive load.

REACTIVE POWER.

Product of the reactive voltage and the current or the voltage and the reactive current in an ac circuit. (Reference: VAR.)

REACTIVE VOLT-AMPERE METER.

Instrument for measuring reactive volt-amperes. (Reference: VAR METER.)

REACTIVE VOLT-AMPERE-HOUR METER.

Electricity meter for measuring and registering reactive volt-ampere-hours. (Reference: VAR-HOUR METER.)

REACTIVE VOLT-AMPERES.

Component of the apparent power in an alternating-current circuit which is delivered to the circuit during part of a cycle but is returned to the source during another part of the cycle. The practical unit of reactive power is the var, equal to one reactive volt-ampere. (Reference: WATTLESS POWER.)

REACTOR.

1. Device used for introducing reactance into a circuit for purposes such as motor starting, paralleling transformers and control of current.
2. Circuit component which offers reactance to varying current.

3. Complete assembly in which nuclear reactions occur.

REACTOR-START MOTOR.

Form of split-phase motor designed for starting with a reactor in series with the main winding. The reactor is short-circuited, or otherwise made ineffective and the auxiliary circuit is opened when the motor has attained a predetermined speed.

READ.

To acquire information in an electronic computer, usually from some form of storage. (Reference: WRITE.)

READABILITY.

Ability to be understood; that is, the understandableness of signals sent by any means of telecommunications.

READDRESS.

To indicate new addresses by the addition of a supplementary heading to the original message or by additional instructions without change in the address or text.

READILY ACCESSIBLE.

Capable of being reached quickly for operation renewal or inspection.

REAL POWER.

Component of the apparent power (volt-amperes) in an ac circuit that represents true work. Expressed in watts. Equal to the volt-amperes multiplied by the power factor.

REAL PROPERTY.

Representing the fixed capital assets of the Air Force; consists of land and interest therein, such as ownership, leases, permits, easements, licenses, or rights-of-way; ground and structural facilities, utility systems except those communications systems which are not an R&U responsibility; and permanently attached or installed appurtenances thereto.

REAL TIME.

Expression applied generally to those data where the information being transmitted has a high rate of obsolescence. An example of this is the

information generated by a modern search radar tracking a particular aircraft where the information is practically obsolete within the time of one radar sweep, particularly in the case of high speed aircraft.

REAUMUR SCALE.

Temperature scale in which the freezing point of water is 0° and the boiling point 80° ; still used to some extent in France, Germany, and Russia. Abbreviated R. To convert R readings to centigrade readings, multiply $5/4$. To convert R readings to Fahrenheit readings, multiply $9/4$ and add 32.

REBECCA.

Airborne interrogator of the British REBECCA-EUREKA navigation system. This interrogator can also be used in conjunction with a special ground beacon known as BABS to provide low approach facilities.

REBECCA-EUREKA.

British radar navigation system which employs an airborne interrogator and a ground transponder beacon. The airborne interrogator is called REBECCA and ground transponder beacon is called EUREKA. This system provides a means of homing to an airfield from distances up to 90 miles. Fixes are obtainable either by measuring ranges from two suitable beacons and plotting the two range circles, or by turning the aircraft until one beacon is indicated as dead ahead, whereon the the aircraft's bearing provides the bearing of the beacon for a bearing and distance, or rho-theta fix. The airborne antenna system consists of a directional antenna mounted on each side of the aircraft. The aircraft homes on the beacon by turning until the signal strength on the two antennas is equal, thus indicating that the beacon is dead ahead. REBECCA'S PRF is 300 per second; therefore, 35 to 40 aircraft is the maximum number which can interrogate one EUREKA simultaneously. Frequencies used in this system usually fall in the VHF range of 214 to 234 mc.

REBROADCAST.

Reception of the program of a radio station and

the simultaneous or subsequent retransmission of such program by a broadcast station.

RECALL.

Flashing signal to the attendant's switchboard. The operator may be recalled by the subscriber by operating the switch hook of his subscriber's set.

RECEIPT.

Transmission made by a receiving station to indicate that a message has been satisfactorily received.

RECEIVER.

Electromechanical device for connecting electrical energy into sound waves or visual indications.

AC (ALTERNATING CURRENT). Radio receiver designed to operate only from an ac source.

AC/DC (ALTERNATING CURRENT/DIRECT CURRENT). Radio receiver, usually consisting of a few tubes and small power consumption, designed to operate directly from an ac or dc source.

BATTERY. Radio receiver that obtains power, required by its vacuum tubes, from batteries.

CODAN. Carrier-operated anti-noise receiver. Noise is automatically suppressed by reduction of receiver gain during intervals when no carrier is present. Gain is restored to normal by arrival of a carrier.

MONITORING RADIO. Radio receiver which is arranged to permit a check to be made on the operation of a transmitting station.

RADAR. Electronic device which amplifies the reflected or returning radar signal and converts it from radio-frequency energy into a form suitable for presentation on the indicator.

RADIO. Device for converting radio waves into perceptible signals.

TELEPHONE. Electroacoustic transducer actuated by energy from an electrical system and

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supplying energy to an acoustic system, the wave form in the acoustic system being substantially equivalent to that in the electrical system.

TELEVISION. Receiver for converting television signals into pictures and associated sound.

RECEIVER BANDWIDTH.

Spread, in frequency, between the half-power points on the receiver response curve.

RECEIVER GAIN.

Control of receiver output. (Reference: GAIN.)

RECEIVER GATING.

Applying operating voltages to one or more IF stages only during the interval when reception is desired.

RECEIVER LOCKOUT SYSTEM.

Arrangement, in mobile communications, of control circuits whereby only one receiver can feed the system at one time to avoid distortion.

RECEIVER NOISE.

Effect on the tracking accuracy of the radar of thermal noise generated in the input impedance of the receiver and any spurious hum which may be picked up by the circuitry.

RECEIVER PRIMARIES.

Colors, in color television, of constant chromaticity and variable luminance produced by the receiver, which, when mixed in proper proportions, are used to produce other colors. Usually three primaries are used: Red, green and blue.

RECEIVER AMPLIFIER.

Amplifier used to raise the signal level at the receiving end of a system.

RECEIVING ANTENNA.

Device for converting received space propagated electromagnetic energy to electrical energy.

RECEIVING CIRCUIT.

Apparatus and connections used exclusively for the reception of messages at a radiotelephone or radiotelegraph station.

RECEIVING EQUIPMENT.

Equipment, amplifier, filters, oscillator, demodulator, etc., associated with incoming signals.

RECEIVING LOOP LOSS.

Part of the repetition equivalent assignable to the station set subscriber line and battery supply circuit which are on the receiving end.

RECEIVING PERFORATOR.

Apparatus used in printing telegraph systems to punch a paper strip in accordance with arriving signals, permitting reproduction of the signals as printed messages when the paper strip is later passed through a printing telegraph machine.

RECEIVING STATION.

Station used for reception of radio signals or messages.

RECEPTACLE.

Contact device installed at an outlet for the connection of a portable lamp or appliance by means of a plug and flexible cord. (Reference: CONVENIENCE RECEPTACLE.)

RECEPTACLE OUTLET.

Outlet intended to be equipped with one or more receptacles, not of the screw-shell type; or to be provided with one or more points of attachment.

RECEPTION.

Listening to, copying, recording, or viewing any form of emission.

DIVERSITY. Method of radio reception whereby, in order to minimize the effects of fading, a resultant signal is obtained by combination or selection, or both, of two or more sources of received-signal energy which carry the same modulation or intelligence but which may differ in strength or signal-to-noise ratio at any given instant.

DOUBLE SUPERHETERODYNE. Method of reception in which two frequency converters are employed before final detection.

FREQUENCY DIVERSITY. Form of diversity reception which utilizes transmission at different frequencies.

HETERODYNE. Process of reception in which a received high frequency wave is combined in a non-linear device with a locally generated wave, with the result that in the output there are frequencies equal to the sum and difference of the combining frequencies. If the received waves are continuous waves of constant amplitude, as in telegraphy, it is customary to adjust the locally generated frequency so that the difference frequency is audible. If the received waves are modulated the locally generated frequency is generally such that the difference frequency is superaudible and an additional operation is necessary to reproduce the original signal wave.

HOMODYNE. System of reception by the aid of a locally generated voltage of carrier frequency.

POLARIZATION DIVERSITY. Form of diversity reception which utilizes separate vertically and horizontally polarized receiving antennas.

RECONDITIONED CARRIER. Method of reception in which the carrier is separated from the sidebands, for the purpose of eliminating amplitude variations and noise, and is then added at an increased level to the sideband, for the purpose of obtaining a relatively undistorted output. This method is frequently employed, for example, when a reduced-carrier, single-sideband transmitter is used.

SPACE DIVERSITY. Form of diversity reception which utilizes receiving antennas placed in different locations.

SUPERHETERODYNE. Method of receiving radio waves in which the process of heterodyne reception is used to convert the voltage of the received wave into a voltage of an intermediate, but usually superaudible, frequency which is then detected.

RECIPROCAL.

Reciprocal of a quantity is one divided by that quantity.

RECIPROCAL BEARING.

Bearing plus or minus 180° .

RECIPROCAL IMPEDANCE.

Two impedances Z_1 and Z_2 are said to be reciprocal impedances with respect to an impedance Z (invariably a resistance) if they are so related as to satisfy the equation $Z_1 Z_2 = Z^2$.

RECIPROCAL-ENERGY THEOREM.

If an electromotive force E in one branch of a circuit produces a current I_2 in any other branch, and if an electromotive force E_2 inserted in this other branch produces a current I_1 in the first branch, then $I_1 E_1 = I_2 E_2$.

RECIPROCATION.

Process of deriving a reciprocal impedance from a given impedance or finding a reciprocal network for a given network.

RECIPROCITY THEOREM.

If a voltage (E) at one point in a network produces a current (I) at a second point in the network, then the same voltage (E) acting at the second point will produce the same current at the first point.

RECLOSING RELAY.

Form of voltage, current, power or other type of relay which functions to reclose a circuit automatically.

RECOG (RECOGNITION).

Determination by any means of the friendly or enemy character or of the individuality of another.

RECOGNITION AND IDENTIFICATION, ELECTRONIC.

Determination by electronic means of the friendly or enemy character or of the individuality of another, and the identification by electronic means of your own friendly character or own individuality. (Reference: RADAR RECOGNITION AND IDENTIFICATION.)

RECOGNITION SIGNAL.

Prearranged signal by which individuals or units may identify each other.

RECOIL.

1. Motion of an atom due to emission of an alpha particle, a beta particle, a neutron, or possibly a quantum of radiation.

2. Backward movement or impulse; rebound.

RECOMBINATION COEFFICIENT.

Value obtained, by dividing the time rate of recombination of ions by the product of the positive-ion density and the negative-ion density.

RECON (RECONNAISSANCE).

Directed effort in the field, undertaken by an appropriate element of the Armed Forces, to gather information of the enemy, terrain, or resources; not to be confused with espionage.

RECONDITIONED CARRIER RECEPTION.

Method of reception in which the carrier is separated from the sidebands, for the purpose of eliminating amplitude variations and noise, and is then added at an increased level to the sideband, for the purpose of obtaining a relatively undistorted output. This method is frequently employed when a reduced-carrier, single-sideband transmitter is used.

RECONNAISSANCE MISSILE.

Tactical or strategic missiles employed in the reconnaissance role. Reconnaissance missiles will be designated with the prefix RTM or RSM followed by a numerical designator.

RECONOFAX.

Electronic direct print camera.

RECORD.

Commercial phonograph pressing. The term is sometimes also applied to instantaneous recording disks.

RECORD PLAYER.

Device for converting a phonograph record into corresponding sound.

RECORD SHEET.

Sheet or medium upon which the image of the subject copy is recorded at the facsimile recorder.

RECORDER.

Instrument which makes a permanent record of a varying electrical impulse. Coded messages are recorded on paper tape by a code recorder; music and voice are recorded on discs, film, tape, or wire, by a sound recorder; pictures and

printed matter are reproduced on paper by facsimile recorder. (Reference: RECORDING INSTRUMENT.)

RECORDING.

Process of registering the received signal upon the record sheet.

RECORDING BLANK.

Recording disk.

RECORDING DEVICES.

These fall into two groups; those that record mechanically, like the magnetic wire recorder; and those that record photographically, like sound movies.

RECORDING DISK.

Unrecorded or blank disk made for recording purposes. The recorded disk is called an instantaneous recording. (Reference: RECORDING BLANK.)

RECORDING HEAD.

Disc recording. (Reference: CUTTER.)

RECORDING INSTRUMENT.

Instrument that makes a graphic record of the manner in which the value of a quantity varies with time. (Reference: RECORDER.)

RECORDING LAMP.

1. Light source so designed that its intensity can be varied in accordance with variations of an audio-frequency signal sent through the lamp. Used in the variable-density system of sound recording on movie film.

2. Light source used for exposing the paper or or film in photographic facsimile recording.

RECORDING LEVEL.

Amplifier output level required to secure a satisfactory recording.

RECORDING SPOT.

Instantaneous area acted on by the registering system of a facsimile recorder. Also the elemental area at the facsimile recorder.

RECORDING TRUNK.

Trunk from a local central office or private

branch exchange to a long distance office, which is used only for communication between operators.

RECOVERY TIME.

1. Time interval, after recording an event, before the pulse produced by the next ionizing event in the counter are of substantially full size.
2. Time required for a radar receiver to recover to within approximately three db of full sensitivity after the main transmitted pulse stops, or after reception of a saturating signal.
3. Time required for the recombination of ions after the firing of a T/R tube.

RECP (RECIPROCAL).

Reciprocal of a quantity is one (1) divided by that number.

RECP (RECIPROCATING).

Back and forth movement. Term applied to piston-driven, internal-combustion engines.

RECTANGULAR SCANNING.

Two-dimensional sector scanning in which a slow sector scanning in one direction is superimposed on a rapid sector scanning in a perpendicular direction.

RECTANGULAR WAVE.

Periodic wave which alternately assumes one of two fixed values, the time of transition being negligible in comparison with the duration of each fixed value.

RECTANGULAR WAVEGUIDE.

Waveguide having a rectangular cross section.

RECTIFICATION.

Conversion of alternating current into unidirectional current.

RECTIFICATION FACTOR.

Quotient of the change in average current of an electrode by the change in amplitude of the alternating sinusoidal voltage applied to the same electrode, the direct voltages of this and other electrodes being maintained constant.

RECTIFIED VALUE OF AN ALTERNATING QUANTITY.

Average of all the positive (or negative) values

of the quantity during an integral number of periods.

RECTIFIER.

1. Electron tube, selenium or copper oxide device, or crystal employed in such a manner as to convert alternating current into unidirectional current.
2. In amplitude modulation detection, recovery of original signals is frequently accomplished by a rectifier.
3. Device that converts alternating current into unidirectional current by permitting appreciable current flow in one direction only.

BARRIER-FILM. Rectifier in which a film having unilateral (single-direction) conductivity is in contact with metal or other normally conducting plates.

BRIDGE. Full-wave rectifier with four elements connected in a bridge circuit so that direct voltage is obtained from one pair of opposite junctions when alternating voltage is applied to the other pair.

CONTACT. Rectifier consisting of two materials in contact, in which rectification is due to greater conductivity across the contact in one direction than in the other.

CRYSTAL. Electrically conductive, or semiconductive substance, natural or synthetic, which has the property of rectifying small radio-frequency voltages; used as a detector or mixer in certain receivers.

DIRECTION. Rectifier which supplies a dc voltage, the magnitude and polarity of which are determined by the magnitude and relative polarity of an ac selsyn error voltage.

END CELL. Small trickle charge rectifier used to maintain voltage of the storage battery end cells.

FULL-WAVE. Rectifier which utilizes both half-cycles of an alternating current to produce a direct current.

HALF-WAVE. Rectifier which changes alternating current into pulsating current, utilizing only one-half of each cycle.

N-TYPE CRYSTAL. Crystal rectifier in which forward current flows when the semiconductor is negative with respect to the metal.

P-TYPE CRYSTAL. Crystal rectifier in which forward current flows when the semiconductor is positive with respect to the metal.

SELENIUM. Rectifier formed of discs of iron in contact with a layer of metallic selenium.

VACUUM-TUBE. Tube which changes alternating current to unidirectional pulsating direct current.

RECTIFIER INSTRUMENT.

Combination of an instrument sensitive to direct current and a rectifying device whereby alternating current (or voltages) may be rectified for measurement.

RECTIFIER STACK.

Dry-disk rectifier made up of layers or stacks of disks of individual rectifiers, as in a selenium rectifier or copper-oxide rectifier.

RECTIFIER TRANSFORMER.

Transformer, the secondary of which supplies energy to the main anodes of the rectifier.

RECTIFYING DETECTOR.

Vacuum tube or crystal detector that operates by passing only those half-cycles of the incoming carrier signal that are all in the same direction, so that they have a cumulative effect on the sound-reproducing device instead of canceling out.

RECTIGON.

Two electrode thermionic tube used as a rectifier for charging storage batteries from ac lines.

RECTILINEAL COMPLIANCE.

Mechanical element that opposes a change in the applied force, such as the springiness that opposes a force action on the diaphragm of a loudspeaker or microphone.

RECTILINEAR.

In a straight line.

RECTILINEAR PROPAGATION.

Straight line travel of a wave.

RECTILINEAR SCANNING.

1. Process of scanning the subject copy in a series of narrow parallel strips. This is the most common type of scanning.

2. Process, in television, of scanning an area in a predetermined sequence of narrow, straight, parallel strips.

RED HEAD.

Project for the comprehensive testing of a new concept of supplying Air Force units deployed in the field. Essentially this concept involves: Submission of all requisitions for parts and supplies by electrical means; filling of these requisitions by air resupply from appropriate depots; and no stockpiling of parts and supplies by the unit in the field. Success of such an operation depends largely on adequate, accurate and reliable communications. Literal transmission of all requisitions for a wing by teletype would require extensive circuit capacity. Possible solutions include coding of requisitions and use of telephoto and facsimile. Accuracy is of primary importance to avoid an engine being airlifted instead of an oil pump. Reliability is necessary since the unit in the field has no reserve of parts and supplies.

RED LINE SERVICE.

Service designed to provide commanders and specifically designated personnel with a means of obtaining special and rapid telephone service over the military network.

RED LINE SUBSCRIBER.

Person designated by the commander to receive red line service.

RED LINE SWITCHBOARD OR POSITION.

Switchboard or position on which trunk(s) and circuit (s) are terminated as part of the red line system.

RED LINE TRUNK CIRCUITS.

Trunks which are specifically identified on the switchboard as reserved for red line section.

RED LINE MESSAGE.

Designation for certain operational immediate message employed between headquarters, USAF, and the commander of major air commands or between the commanders of major air commands.

REDSTONE.

Short range surface-to-surface tactical missile developed for the Army. It is powered by a liquid-propellant rocket engine. Inertial guidance is employed.

REDUCED KVA TAP.

Tap through which the transformer can deliver only an output less than rated KVA and keep within the specified temperature rise.

REDUCING CAP.

Cast iron fitting for reducing the size of a steel pipe at the base of a pole to fit a U-guard.

REDUCING JOINT.

Joint between two lengths of cable, the conductors of which are not the same size.

REDUNDANCY.

Redundancy, in the transmission of information, is the fraction of the gross information content of a message which can be eliminated without loss of essential information. Numerically, it is one minus the ratio of the net information content to the gross information content, expressed in per cent.

REDUNDANCE CHECK.

(Reference: CHECK, FORBIDDEN-COMBINATION.)

REED FREQUENCY METER.

Vibrating-reed type of instrument for measuring frequency.

REFERENCE ACOUSTIC PRESSURE.

Magnitude of any complex sound that will produce a sound level meter reading equal to that produced by a sound pressure of 0.0002 dyne per square centimeter at 1,000 cycles per second. (Reference: REFERENCE SOUND LEVEL.)

REFERENCE ANGLE.

Angle formed between the center line of a radar beam as it strikes a reflecting surface and the perpendicular drawn to that reflecting surface.

REFERENCE LEVEL.

Level used as a starting point when designating the value of an alternating quantity or a change in the quantity by means of decibel units. For sound loudness, the reference level is usually the threshold of hearing. For communication receivers, the commonly used level is 60 microwatts. A common reference in electronics is one milliwatt and power is stated as decibels above or below one milliwatt (dbm).

REFERENCE LINE.

Given line from which bearings are to be calculated.

REFERENCE NOISE.

Magnitude of circuit noise that will produce a circuit noise meter reading equal to that produced by 10-12 watt of electric power at 1,000 cycles per second.

REFERENCE RANGE.

Range obtained from the radar coverage indicator for a given penetrating aircraft. In quality control, it is divided into the actual detection range to obtain percent performance.

REFERENCE RECORDING.

Recording of a radio program for future reference or checking.

REFERENCE SOUND LEVEL.

Magnitude of any complex sound that will produce a sound level meter reading equal to that produced by a sound pressure of 0.0002 dyne per square centimeter at 1,000 cycles per second. (Reference: REFERENCE ACOUSTIC PRESSURE.)

REFERENCE TONE.

Stable tone of known frequency continuously recorded on one track of multi-track signal recordings and intermittently recorded on signal track recordings by the collection equipment operators for subsequent use by the data analysts as a frequency reference.

REFERENCE VOLTAGE.

The ac voltage, in a synchro servo system, used to determine the in-phase or 180° out-of-phase condition in order to provide directional sense.

REFERENCE VOLUME.

Magnitude of a complex electric wave, such as that corresponding to speech or music, which gives a reading of zero VU on a standard volume indicator. The sensitivity of the volume indicator is adjusted so that reference volume or zero VU is read when the instrument is connected across a 600-ohm resistance to which there is delivered a power of one milliwatt at 1,000 cycles per second.

REFERENCE WHITE LEVEL.

Level removed in the direction of white from the synchronizing signal peak by an amount equal to 4.0 times the peak-to-peak amplitude of the synchronizing signal.

REFILE.

Reprocessing of messages into appropriate procedure for transfer to another system.

REFLECTANCE.

Ratio of the total luminous flux reflected by a given surface to the incident flux. (Reference: REFLECTION FACTOR.)

REFLECTED.

Wave, in electronics, traveling in a direction away from the load.

REFLECTED IMPEDANCE.

1. Impedance value that appears to exist across the primary of a transformer due to current flowing in the secondary.

2. Impedance which appears at the input terminals as a result of the characteristics of the impedance at the output terminals.

REFLECTED RESISTANCE.

Resistance value that appears to exist across the primary of a transformer when a resistive load is across the secondary.

REFLECTED WAVE.

1. Part of the incident wave reflected back into the first median.

2. Sky wave reflected from the ionosphere layer back to the earth.

3. Wave reflected from the junction of two media.

REFLECTING CURTAIN.

Vertical array of half-wave reflecting antennas, generally placed one-quarter wave length behind a radiating curtain of dipoles to form the pine-tree array.

REFLECTING ELECTRODE.

Tabular outer electrode or the repeller plate in a microwave oscillator tube, corresponding in construction but not in function to the plate of an ordinary triode. Used for generating extremely high frequencies.

REFLECTING GALVANOMETER.

Galvanometer in which a small mirror attached to the moving element reflects a beam of light onto a scale or reflects an image of a scale into a telescope.

REFLECTING GRATING.

Arrangement of wires placed in a waveguide to reflect one desired wave while allowing one or more other waves to pass freely. During simultaneous reception of two waves, the reflecting grating can completely reflect one wave back to the first detecting grating, while the other wave passes through both of these gratings to a piston that reflects it back to another detecting grating.

REFLECTION.

Phenomenon which causes a wave which strikes a medium of different characteristics to be returned into the original medium with the angles of incidence and of reflection equal and lying in the same plane.

REFLECTION ALTIMETER.

Aircraft altimeter depending on the reflection of sound, supersonic waves, or radio waves from the earth for the determination of altitude.

REFLECTION COEFFICIENT.

Reflection coefficient at the junction of a source of power and an absorber of power is unity minus the ratio of the current which is actually received to the current which would be received

if the impedance of the absorber of power were equal to the impedance of the source of power. The ratio of a quantity in the reflected wave to the same quantity in the incident wave.

REFLECTION FACTOR.

1. Ratio of the load current that is delivered to a particular load when the impedances are mismatched to that delivered under conditions of matched impedances.

2. Ratio of the total luminous flux reflected by a given surface to the incident flux.

REFLECTION LAW.

Angle of incidence is equal to the angle of reflection.

REFLECTION LOSS.

Apparent transmission loss of a line which results from a portion of the energy being reflected back toward the source due to a discontinuity in the transmission line.

REFLECTION SOUNDING.

Echo depth sounding, in which reflection of sound waves or supersonic waves from the bottom of the ocean is utilized in electronic methods of measuring depth.

REFLECTIONS.

Return of light or sound waves from surfaces.

ABNORMAL. Sharply defined reflections of radio waves from an ionized layer of the ionosphere, occurring at frequencies greater than the critical (penetration) frequency of the layer.

SCATTERED. Reflection composed of various components of different virtual reflection heights which cause interference and fading.

SPORADIC. Sharply defined reflections of substantial intensity from the sporadic E-layer at frequencies greater than the critical frequency of the layer. They are variable with respect to time of occurrence, geographic location, and range of frequencies at which they are observed.

ZIG-ZAG. High-order multiple reflections which may be of abnormal intensity. They occur in waves which return to the starting point after multiple ionospheric reflections.

REFLECTIVE JAMMING.

Use of radar confusion reflectors to return false and confusing signals to the enemy radar receiver.

REFLECTIVITY.

Fraction of incident radiant energy that is reflected.

REFLECTOMETER.

Instrument for measuring the reflection factor or reflectance of a reflecting surface.

REFLECTOR.

1. Device to redirect radiation in a desired direction or directions.

2. Rear portion (parasitic element) of a directional antenna, not connected to the transmitter or receiver, and so designed as to increase the radiation effectiveness in the forward direction.

3. Element in a reflex klystron tube which reflects the electrons back toward the grid. (Reference: REPELLER.)

ANTENNA. That portion of a directional antenna array which reduces the field intensity behind the array and increases it in the forward direction.

CONFUSION. Radio wave reflector used for creating echoes for confusion purposes against radar, proximity fuzes, and guided missiles.

CORNER. Device, normally consisting of three metallic surfaces or screens perpendicular to one another, designed to act as a radar target or marker.

DIFFUSE. Reflector or mosaic of reflectors that scatters incident radiation in all directions.

GRATING. Open work metal structure, in antenna practice, designed to provide a reflecting surface.

REFLECTOR ELEMENT.

Passive element so situated with respect to its associated primary elements that the direction of maximum radiation from the antenna is opposite to that from the primary elements to the passive elements.

REFLECTOR VOLTAGE.

Voltage between the reflector electrode and the cathode in a reflex klystron.

REFLEX BAFFLE.

Loudspeaker baffle in which a portion of the radiation from the rear of the diaphragm is propagated forward after controlled shift of phase or other modification, the purpose being to increase the overall radiation in some portion of the frequency spectrum.

REFLEX CIRCUIT.

Circuit arrangement in which the signal is amplified, both before and after detection, in the same amplifier tube or tubes.

REFLEX CIRCUIT ARRANGEMENT.

Circuit arrangement in which the signal is amplified, both before and after detection, in the same amplifier tube or tubes.

REFLEX KLYSTRON.

Klystron which employs a reflector (repeller) electrode, in place of a second resonant cavity, to redirect the velocity-modulated electrons through the resonant cavity which produced the modulation. Such klystrons are well suited for use as oscillators, because the frequency is easily controlled by varying the position of the reflector.

REFRACTED WAVE.

Wave that travels in the second medium which is caused by a wave in the first medium incident to the surface separating the media. A radio wave traveling through a medium in which the refractive index is continually changing is caused to follow a curved path in the medium such as a radio wave follows in the ionosphere. (Reference: TRANSMITTED WAVE.)

REFRACTING POWER.

Power of a lens or lens system to converge or diverge rays.

REFRACTION.

Phenomenon which causes a wave entering another medium obliquely to undergo an abrupt change in direction when the velocity of the wave in the second medium is different from that in the first.

REFRACTIVE INDEX.

Ratio of the phase velocity, of a wave transmission medium, in free space to that in the medium.

REFRACTIVE MODULUS.

Excess over unity of the modified index of refraction expressed in millionths. It is represented by M and is given by the equation ($M = (n + h/a - 1) 10^6$), where n is the index of refraction at a height h above sea level, and a is the radius of the earth.

REFRACTIVITY.

Ratio of phase velocity in free space to that in the medium minus 1.

REFRACTOMETER.

Instrument for measuring the refractive index of a liquid or solid, usually by measuring the critical angle at which total reflection occurs.

REFRACTOR.

Device, usually of prismatic glass (clear glass fabricated as a series of prisms), which redirects the light of a lamp in desired directions principally by refraction.

REFRANGIBLE.

Capable of being refracted.

REG (REGULATION).

1. Short for Air Force Regulation.
2. Act of governing, controlling, or directing; or state of being governed, controlled or directed.
3. Official order issued by a military service or command setting forth rules, procedures, policies, or the like, considered general in application and permanent in nature.

REGENERATION.

1. Process by which a part of the power in the output circuit of an amplifying device reacts

upon the input circuit in such a manner as to reinforce the initial power, thereby increasing the amplification. (Reference: POSITIVE FEEDBACK.)

2. Storage device, in an electronic computer, whose information storing state may deteriorate the process of restoring the device to its latest undeteriorated state. (Reference: REWRITE.)

REGENERATION CONTROL.

Variable capacitor, variable inductor, potentiometer, or rheostat used in a regenerative receiver to control the amount of feedback and thereby keep regeneration within useful limits.

REGENERATIVE AMPLIFICATION.

Amplification that gives increased gain and selectivity by a feed-back arrangement similar to that used in a regenerative detector. The signal is sent back through the same tube for additional amplification, but operation is always kept just below the point of oscillation.

REGENERATIVE BRAKING.

System of dynamic braking in which the traction motors are used as generators by the momentum of the equipment being braked, and return energy to the power-supply system exerting a retarding force.

REGENERATIVE DETECTOR.

Vacuum-tube detector circuit in which radio-frequency energy is fed back from the plate circuit to the grid circuit in such a way as to produce regeneration, thereby greatly increasing the amplification and sensitivity of the circuit.

REGENERATIVE DIVIDER.

Frequency divider which employs modulation, amplification, and selective feedback to produce the output wave.

REGENERATIVE FEEDBACK.

(Reference: REGENERATION.)

REGENERATIVE RECEIVER.

Radio receiver which employs controlled regeneration to increase the amplification provided by a vacuum-tube stage.

REGENERATIVE REPEATER.

Repeater which performs pulse regeneration.

REGION.

Geographical subdivision of a territory designated as the area of responsibility of a NORAD force.

AIR DEFENSE. Geographical subdivision of an air defense area.

F. Region of the ionosphere above about 160 kilometers.

FRAUNHOFER. Region of the field in which the energy flow from an antenna proceeds essentially as though coming from a point source located in the vicinity of the antenna.

FRESNEL. Region between the antenna and the Fraunhofer region.

REGIONAL CHANNEL.

Standard broadcast channel in which several stations may operate with powers not in excess of five kilowatts. The primary service area of a station operating on any such channel may be limited, as a consequence of interference, to a given field-intensity contour.

REGISTER.

Device in an electronic computer, capable of retaining information, often that contained in a small subset of the aggregate information in a digital computer. (Reference: STORAGE.)

REGISTER CONSTANT.

Factor used in conjunction with the register reading in order to ascertain, in the desired unit, the total amount of electric energy that has passed through the meter.

REGISTER CONTROL.

Device used to provide automatic register. In photoelectric register control, a light source and phototube form a scanning head so arranged that the amount of light reaching the phototube changes whenever a specially printed mark or a part of the design (printed on the continuous web of paper) arrives at the scanning head. If

this controlling design is not in the correct position, correction is made automatically by apparatus actuated by the phototube through amplifiers and relays.

REGISTER LENGTH.

Number of characters, in an electronic computer, which a register can store.

REGISTER NUMBER.

Identification symbols assigned to registered matter for accounting purposes.

REGISTER OF METER.

Part of the meter which registers the revolutions of the rotating element in terms of units of electric energy (or of quantity).

REGISTERED CRYPTOMATERIAL.

Authorized classified cryptomaterial (including cryptosystems, cipher machines, codes, cryptographic instructions, and devices), which bears a register number and for which periodic accounting is required.

REGISTERED DOCUMENT.

Top secret, secret, or confidential document or device carrying a copy number, a short title, and instructions to account for it periodically.

REGISTERED MATTER.

Classified matter registered, usually by number and accounted for periodically. (Reference: REGISTERED PUBLICATION.)

REGISTERED PUBLICATION.

Classified publication bearing a register number as well as a long and short title, and for which periodic accounting is required.

REGISTRATION OF METER.

Apparent amount of electric energy that has passed through the meter. It is equal to the product of the register reading and the register constant.

REGULAR.

1. In a definite direction; not diffused or scattered, when applied to reflections, refraction, or transmission.
2. Symmetrical; acting according to rule; orderly; recurring without fail.

REGULAR BAR.

Rectangular bar elongated parallel to Y with its edges parallel to X, Y, and Z. Usually cut from Z sections. (Reference: Y-BAR.)

REGULAR REFLECTION.

Reflection of light, sound, or radio waves from a surface so smooth that its inequalities are small in comparison with the wavelength of the incident rays, so that each incident ray gives rise to a reflected ray in the same plane. (Reference: SPECULAR REFLECTION, REFLECTION.)

REGULATED POWER SUPPLY.

Power supply device containing means for maintaining constant voltage or constant current under changing load conditions.

REGULATED RECTIFIER.

Unit for supplying dc power at constant voltage in spite of load or line supply voltage variations.

REGULATING RELAY.

Relay which operates because of a departure from predetermined limits of a quantity and which functions through supplementary equipment to restore the quantity within these limits.

REGULATING TRANSFORMER.

Transformer having one or more windings excited from the system circuit or a separate source and one or more windings connected in series with the system circuit for adjusting the voltage or the phase relation or both in steps, usually without interrupting the load.

REGULATING WINDING.

Regulating winding of a transformer is a supplementary winding which is connected in series with one of the main windings for the purpose of changing the ratio of transformation or the phase relation, or both, between circuits.

REGULATION.

1. Maintaining a constant level of power, voltage, signal, etc., in a circuit or system.
2. Ratio of the change in voltage due to a load to the open-circuit voltage, expressed in percent.

REGULATION OF CONSTANT-CURRENT TRANSFORMER.

Maximum departure of the secondary current

from its rated value expressed in percent of the rated secondary current, with rated primary voltage and frequency applied.

REGULATOR OF A CONSTANT-POTENTIAL TRANSFORMER.

Change in secondary voltage, expressed in percent of rated secondary voltage, which occurs when rated KVA output at a specified power factor is reduced to zero, with the primary impressed terminal voltage maintained constant.

Note. In the case of multiwinding transformers, the loads on all windings, at specified power factors, are to be reduced simultaneously from rated KVA to zero.

REGULATOR.

Device which functions to maintain a designated characteristic at a predetermined value, or to vary it according to a predetermined plan.

AUTOMATIC VOLTAGE. Device or circuit which maintains a constant voltage.

REGULUS.

Surface-to-surface guided missile developed for the Navy. It is designed to carry a nuclear warhead and is powered by a turbojet engine with solid fuel rocket booster for launching. It is sweptwing and weighs about 15,000 lbs. It can be launched from submarines or ships. The outer wing panels are made of cast magnesium, resulting in a material saving in weight. The missile has a length of 33 feet, a span of 21 feet, a height of 9.5 feet, and a body diameter of 4.5 feet. The nomenclature is XSSM-N-8. It can fly at transonic speeds and has a range of about 500 miles. Guidance is by a command system.

REIDENTIFY.

Manual action by which the classification of a track is changed.

REINARTZ CRYSTAL OSCILLATOR.

Crystal controlled vacuum-tube oscillator in which the crystal current is kept low by placing in the cathode lead, a resonant circuit tuned to

half the crystal frequency. The resulting regeneration at the crystal frequency improves efficiency without the danger of uncontrollable oscillation at other frequencies.

REINITIATE.

Manual action by which a track is re-associated with data.

REINSERTION OF CARRIER.

Combining a locally generated carrier signal in a receiver with an incoming signal of the suppressed carrier type.

REJECTOR CIRCUIT.

Name, sometimes given to a parallel resonant circuit, that is tuned to the frequency of an undesired signal and connected to suppress or reject that signal.

REL.

Unit of reluctance, equal to one ampere-turn per magnetic line of force.

RELATIVE BEARING.

Direction of an object measured clockwise in degrees from a ship or aircraft heading.

RELATIVE DIELECTRIC CONSTANT.

Ratio of the dielectric constant of a material to the dielectric constant of a vacuum.

RELATIVE HUMIDITY.

Ratio of the amount of water vapor actually present in air to the greatest amount that can be present at a given temperature, expressed as a percentage. At 100 percent humidity, the vapor condenses as a liquid.

RELATIVE INTERFERENCE EFFECT.

Relative interference effect of a single frequency electric wave in an electro-acoustic system is the ratio, usually expressed in db, of the amplitude of a wave of specified reference frequency to that of the wave in question when the two waves are equal in interference effects. The frequency of maximum interference effect is usually taken as the reference frequency. Equal interference effects are usually determined by judgment tests or intelligibility tests.

RELATIVE POWER GAIN.

Relative power gain of one transmitting or receiving antenna over another is the measured ratio of the signal power one produces at the receiver input terminals to that produced by the other, the transmitting power level remaining fixed.

RELATIVE REFRACTIVE INDEX.

Refractive index of a wave transmission medium is the ratio of the phase velocity in free space to that in the medium. Of two media, the ratio of their refractive indices.

RELATIVE TRANSMISSION LEVEL.

Ratio of the test-tone power at that point to the test-tone power at some point in the system chosen as a reference point. The ratio shall be expressed in db. The transmission level at the transmitting switchboard is frequently taken as the zero level reference point. (Reference: ZERO TRANSMISSION-LEVEL REFERENCE POINT.)

RELATIVITY.

Modern system of natural philosophy introduced and largely developed by Albert Einstein and characterized by its recognition of the interdependence of matter, space, and time. It includes a mathematical development of two postulates:

1. If two systems are moving with uniform but different linear velocities, it is impossible for observers in either system to learn anything more about the motion than the fact that relative motion does exist.

2. Measurements of the velocity of light will give the same numerical value in either moving system.

RELAXATION CIRCUIT.

Circuit arrangement, usually of vacuum tubes reactances and resistances, which has two states or conditions; one, both, or neither of which may be stable. The transient voltage produced by passing from one to the other, or the voltage in a state of rest, can be used in other circuits.

RELAXATION INVERTER.

Inverter that uses a relaxation oscillator circuit to convert dc power to ac power.

RELAXATION OSCILLATOR.

Device which generates a nonsinusoidal wave by gradually charging and quickly discharging a capacitor or an inductor through a resistor. The frequency of a relaxation oscillator may be self-determined or determined by a synchronizing voltage derived from an external source.

RELAY.

1. Transmission forwarded through an intermediate station.
2. Electrically operated switch, usually comprised of an electromagnet, an armature, and a number of contact springs.
3. Device in which a small current or power flow can be made to control a larger current or power flow in a secondary circuit by opening or closing contacts. Usually contains an electromagnet and armature.

CUTOFF. Relay, in a subscriber's line circuit, which operates on an incoming call to disconnect the equipment for making outgoing calls.

DIFFERENTIAL. Relay that functions by reason of the difference between two quantities of the same nature such as two currents or two voltages.

FLAT SPRING. Relay with flat spring contacts, which is fast operating, and fast or slow released. Used to control the multicontact relays.

GUARD. Used in the linefinder circuit to make sure that only one linefinder can be connected to any line circuit when two or more line relays are operated simultaneously.

LINE. Relay in a subscriber's line which operates on his call-in signal.

MARGINAL. Relay with a small margin between its non-operative current value (maximum current applicable without operation) and its operative value (minimum current that operates the relay).

MULTICONTACT. Reed-tape relay with wire springs making and breaking as many as 33 contacts per operation. The fundamental apparatus unit of the linefinder, selector and connector circuits of the all-relay system.

NUETRAL. Relay in which the movement of the armature does not depend upon the direction of the current in the circuit controlling the armature.

POLARIZED. Relay in which the movement of the armature depends upon the direction of the current in the circuit controlling the armature.

SEMI-AUTOMATIC TAPE. Method of communication whereby messages are received and retransmitted in teletypewriter tape form involving manual intervention in transfer of the tape from receiving reperforator to automatic transmitter.

SLOW-ACTING. Relay which remains operative momentarily after its holding circuit is opened (slow-releasing type), or a relay which delays its operation after the circuit is closed (slow-operating type.)

TWIN-CONTACT. Relay with two contacts on a bifurcated contact-spring.

TWO-STEP. Relay with spring contacts operated at different intervals of time.

RELAY BIAS.

Bias produced by a spring or an electromagnet acting on the armature of the relay, which tends to hold the armature in a given position (usually the spacing condition on a teletypewriter).

RELAY BROADCAST STATION.

Station licensed to transmit, from points where wire facilities are not available, programs from broadcast by one or more broadcast stations, or orders concerning such programs.

RELAY CONTACTS.

Contacts that are closed or opened by the movement of the armature of a relay.

RELAY DROP.

Relay activated by incoming ringing current to call an operators attention to a subscribers line.

RELAY MAGNET.

Coil and iron core forming an electromagnet that attracts the armature of a relay when energized, causing opening or closing of contacts.

RELAY RACK.

Frame on which relays are mounted.

RELAY STATION.

Radio station which receives signals from one or more bases, mobile, or portable stations and automatically retransmits the received intelligence to another station. Relay stations are used to extend communications beyond the normal range of two adjacent stations.

RELAY SYSTEM.

Dial switching equipment that does not utilize mechanical switches, but is made up principally of relays.

RELAY TRANSMITTER.

Transmitter that regularly rebroadcasts a sound or television program received at the transmitter station, in order that the program can be passed on to another station outside the range of the originating station. Television networks employ relay transmitters in this manner. (Reference: REPEATER STATION.)

RELEASE.

Electromagnetic device for opening a circuit breaker automatically or for allowing a motor starter to return to its off position when tripped by hand, an interruption of the power supply, or by excessive current.

RELEASE (DISCONNECT OR CLEAR).

Disengage the apparatus used in a telephone connection and restore it to its condition when not in use.

RELEASING OFFICER.

Person who may authorize the transmission of a message for, and in the name of, the originator.

RELUCTANCE.

Property of a magnetic circuit which determines the amount of magnetic flux that will be produced as a result of the application of a given magnetomotive force.

RELUCTANCE MOTOR.

Synchronous motor similar in construction to an induction motor, in which the member carrying the secondary circuit has salient poles, without dc excitation. It starts as an induction motor, but operates normally at synchronous speed.

RELUCTIVITY.

Measure of the ability of the magnetic material to conduct magnetic flux. The reciprocal of permeability.

REMANENCE.

Magnetic inductance which remains in a magnetic circuit after the removal of an applied magnetomotive force.

REMANENT MAGNETIZATION.

Magnetization retained by a substance when the magnetizing force is removed.

REMODULATOR.

Device for converting amplitude modulation to audio frequency shift modulation (formerly called SCFM) for transmission over a voice radio frequency channel.

REMOTE CONTROL.

1. Control of the function or equipment from a distant point by electrical means.
2. System or method of radio-transmitter control whereby the control functions are performed from a distance, electrically, over intervening wire or radio circuits.

REMOTE CUTOFF.

Requiring a very large negative bias for complete cutoff of plate current in a vacuum tube.

REMOTE INDICATOR.

Radar indicator which is connected in parallel with the radar operator's indicator, but which is located so as to be visible to the navigator or pilot. An additional indicator located at a station remote from the operator's equipment.

REMOTE METERING.

Registering on a meter at a central control point the energy consumption at some other point in a system.

REMOTE PICKUP.

Picking up a program with microphones at a remote location (away from the studios) and transmitting it to the studio or transmitter over telephone lines or over a short-wave radio link.

REMOTE PPI.

Unit which repeats PPI indication at a location remote from the radar console. (Reference: PPI REPEATER.)

REMOTE-CONTROL EQUIPMENT.

1. Apparatus which is used for performing a prescribed function or functions at a distance by electrical means.
2. Formulating and reformulating apparatus used for performing a prescribed function or functions at a distance by electrical means. (Reference: TELESYND.)

REMOTE-CUTOFF TUBE.

Electron tube which is designed so as to approach cutoff very gradually as the negative grid potential is increased.

RENEWABLE FUSE UNIT.

Fuse unit which may be readily restored for service after operation by the replacement of the fused link.

RECORDER POINT.

Point when a stock replenishment requisition should be submitted in order to maintain the stockage objective. Safety reserve level plus pipeline time requirement equals the reorder point. Reorder point levels may be determined by the arithmetical formulas furnished in AFM 67-1.

REP (REPAIR).

Restoring of damaged, wornout, or malfunctioning materiel to a serviceable, usable, or previous condition.

REPEAT POINT.

Reception, in a superheterodyne receiver, of a given station at two different local oscillator frequency values. With the local oscillator adjusted above the incoming signal frequency value, and

with the local oscillator adjusted below the incoming signal frequency by the intermediate-frequency value. (Reference: DOUBLE-SPOT TUNING.)

REPEATER.

1. Device which receives telegraph or teletypewriter signals from one circuit and retransmits them into another.
2. Device employing vacuum tubes which receives voice energy from one circuit and sends them without added distortion at a higher level into another circuit.
3. Combination of apparatus for receiving either one-way or two-way communication signals and delivering corresponding signals which are either amplified or reshaped or both. A repeater for one-way communication signals is termed a one-way repeater and one for two-way communication signals, a two-way repeater.
4. Switch by which originating central office, calling-telephone, dialed pulses are repeated to switches at a distant office.
5. Relay circuit, in dial signaling, which amplifies and repeats dial pulses received from one circuit into another.
6. Assemblage of equipment, the active component of which is an amplifier, employed to rebuild signal strength.

FOUR WIRE. Telephone repeater operating in a circuit which transmits in one direction on one pair of wires and in the other on another pair.

TWO-WAY. Used to transmit inter-office calls in either direction over the same inter-office trunk.

REPEATER JAMMER.

Jamming transmitter used to confuse or deceive the enemy by causing the victim equipment to present false information. This is accomplished by a system which intercepts and reradiates a signal on the frequency of the victim equipment. The reradiated signal is modified, causing the victim equipment to present erroneous azimuth, range or number of targets.

REPEATER SECTION.

Line section between terminals when no repeaters are used, or between a terminal and a repeater, or between repeaters.

REPEATER STATION.

1. Station at which a repeater is located for the purpose of building up the strength of a telephone or telegraph signal in a long line.
2. Radio station that operates on the same frequency as another station and carries the same program, giving increased coverage.
3. Combination radio transmitter and receiver, often unattended, used in relaying a program from one station to another by radio when the distance is too great for direct reliable service between the stations. (Reference: RELAY TRANSMITTER.)
4. Intermediate station in a microwave system which is arranged to receive a signal from an adjacent station and amplify and retransmit the signal to another adjacent station. Usually performs this function in both directions simultaneously.

REPEATING COIL.

1. General term for a transformer in a speech or signal circuit.
2. Audio-frequency transformer, usually having a one-to-one ratio, which is used to connect two sections of telephone line inductively so as to permit the formation of simplex and phantom circuits.

REPEATING FLASH TUBE.

Flash tube, that makes rapid, brilliant flashes, used in planes fitted with special electronic equipment. It permits taking night aerial photographs from altitudes up to two miles.

REPELLER.

Element in a reflex klystron tube which reflects the electrons back toward the grid. (Reference: REFLECTOR.)

REPERFORATOR.

Teletypewriter practice, a device for punching code signals in paper tape for application to

a tape transmitter. A perforating device which is automatically controlled by incoming signals is sometimes called a perforator.

REPERFORATOR SWITCHING CENTER.

Message relaying center at which incoming messages are received on a reperforator which perforates a storage tape from which the message is retransmitted into the proper outgoing circuit. The reperforator may be of the type which also prints the message on the same tape, and the selection of the outgoing circuit may be manual or under control of selection characters at the head of the message.

REPETITION RATE.

Repetition rate signifies broadly the number of repetitions per unit time. In radar it is the rate (usually given in pulses per second) at which pulses are transmitted.

REPLACEMENT FACTOR.

Estimated percentage of equipment in use that will require replacement during a given period due to wearing out beyond repair, enemy action, abandonment, pilferage, and other causes except losses incident to the separation of personnel and intransit losses attributable to ship sinkings.

REPLENISHMENT REQUISITION.

Routine requisition initiated periodically by the base supply officer pursuant to current directives for the replenishment of base stocks within stock control levels. These requisitions are forwarded according to a schedule established by the supplying depot, usually once each month for items requiring replenishment.

REPLY.

1. Message to the originator of a previous message which asked a question.
2. Answer to a challenge. Replies promulgated in key lists take the form of identities or pyrotechnics.

REPORTING POINT.

Specified geographical location in relation to which the position of an aircraft can be reported.

REPORTING POST.

Radar installation capable of providing medium/high altitude medium range radar cover. Low cover to be consistent with line of sight ranges and sitting restrictions. A reporting post must be capable of performing the functions of radar surveillance and raid reporting.

REPORTING POST-COASTAL LOW.

Radar installation capable of providing low altitude (up to 1,500 feet), short range cover. A reporting post-coastal low must be capable of performing the functions of radar surveillance and raid reporting. The functions of this installation may also include reporting of surface vessel movements.

REPORTING POST-COASTAL MEDIUM.

Radar installation capable of providing low altitude (up to 5,000 feet) short range cover. A reporting post-coastal medium must be capable of performing the functions of radar surveillance and raid reportion.

REPRINT.

Complete copy of an existing publication. It does not supersede existing copies but is reproduced for the purpose of augmenting stock. It will normally include all changes which have been promulgated.

REPROD (RECEIVER PROTECTION DEVICE).

Part of the duplexer assembly which is used in radar equipment to prevent overloading of the receiver by the transmitted pulse.

REPRODUCER.

Instrument used to translate electric signals into sound waves. (Reference: LOUDSPEAKER.)

REPRODUCING STYLUS.

Phonograph needle or sapphire jewel used in a phonograph pick-up to transmit record groove variations to the pick-up as mechanical motion.

REPRODUCTION SPEED.

Area of copy recorded per unit time.

REPT (REPORT).

1. Official account or statement of facts about a particular subject.

2. To make an official account or statement.
3. To present oneself or appear.

REPULSION.

Mechanical force tending to separate bodies having like electrical charges or like magnetic polarity, or in the case of adjacent conductors, having currents flowing in opposite directions.

REPULSION INDUCTION MOTOR.

Form of repulsion motor which has a squirrel-cage winding in the rotor in addition to the repulsion motor winding. A motor of this type may have either a constant-speed or varying-speed characteristic.

REPULSION MOTOR.

Single-phase motor which has a stator winding arranged for connection to the source of power and a rotor winding connected to a commutator. Brushes on the commutator are short-circuited and are so placed that the magnetic axis of the rotor winding is inclined to the magnetic axis of the stator winding. This type of motor has a varying-speed characteristic.

REPULSION-START INDUCTION MOTOR.

Single-phase motor having the same windings as a repulsion motor but at a predetermined speed. The rotor winding is short-circuited or otherwise connected to give the equivalent of a squirrel-cage winding. This type of motor starts as a repulsion motor but operates as an induction motor with constant-speed characteristics.

REQUIREMENTS.

Need or demand for personnel, equipment and supplies, resources, facilities, or service, by specific quantities for specific periods of time or at specified times.

REQUISITION.

1. Authoritative demand or request, especially for personnel, supplies, or services, authorized but not made available without specific request, to make such a demand or request.
2. To demand or require services from an invaded or conquered nation.

RERADIATION.

Scattering of incident radiation or the radiation of signals amplified in a radio receiver.

RERECORDING.

Recording made from the reproduction of a recording. (Reference: DUBBING.)

RESCIND.

To vacate or terminate an order, regulation, or the like.

RESCUE ALERTING CENTER.

Center which performs the act of requesting the appropriate control authority, rescue unit or assisting organization to guard some radio frequency or stand-by prepared to proceed on a mission.

RESCUE CONTROL CENTER.

Unit, subordinate to a safety center, which directs search and rescue activities.

RESERVE SUPPLIES.

Supplies accumulated in excess of immediate needs for the purpose of insuring continuity of an adequate supply.

RESET.

1. To restore a storage device, in an electric computer, to a prescribed state.
2. To place a binary cell in the initial or zero state. (Reference: CLEAR.)

RESIDUAL CHARGE.

Charge remaining on the plates of a capacitor after an initial discharge of the capacitor.

RESIDUAL CURRENT.

Vector sum, of an electric supply circuit, of the currents in the several wires.

RESIDUAL ERROR.

Direction finding errors remaining after errors due to site and antenna effects have been reduced as much as possible.

RESIDUAL FIELD.

Magnetic field left in the iron field structure after excitation has been removed.

RESIDUAL GASES.

Small amount of various gases remaining in a

vacuum tube even after the best possible exhaustion by vacuum pumps.

RESIDUAL IONIZATION.

Ionization of air or other gas in a closed chamber, not accounted for by recognizable neighboring agencies.

RESIDUAL MAGNETIC INDUCTION.

Magnetic induction remaining in a ferromagnetic object after the magnetizing force is removed. The amount depends on the material, shape, and previous magnetic history.

RESIDUAL MAGNETISM.

Magnetism remaining in a substance after removal of the magnetizing force.

RESIDUAL SCREW.

Brass screw in the center of a relay armature used to adjust the residual air gap between the armature and the coil core of a relay to prevent residual magnetism from holding the armature operated after the operating circuit of the relay is opened.

RESIDUAL VOLTAGE.

Vector sum of the voltages to ground of the several phase wires of the circuit of an electric supply circuit.

RESISTANCE.

1. Property of a conductor which determines the amount of current that will flow as the result of the application of a given electromotive force. All conductors possess some resistance, but when a device is made especially for the purpose of limiting current flow it is called a resistor. A resistance of one ohm will allow a current of one ampere to flow through it when a potential of one volt is applied.

2. Opposition which a device or material offers to the flow of current. The effect of resistance is to raise the temperature of the material or device carrying the current.

3. Circuit element designed to offer a predetermined resistance to current flow.

ANTENNA. Quotient of the power supplied

to the entire antenna circuit by the square of the effective antenna current referred to a specified point.

ACOUSTIC. The real component of acoustic impedance. It is responsible for dissipation of energy due to friction between molecules of the air or other medium through which sound travels. It is expressed in acoustic ohms and is analogous to electrical resistance.

PLATE. Internal resistance to the flow of alternating current between the cathode and plate of a tube. It is equal to a small change in plate voltage divided by the corresponding change in plate current, and is expressed in ohms. It is also called ac resistance, internal impedance, plate impedance, and dynamic plate impedance.

RADIATION. Radiation resistance is equal to the power radiated by an antenna divided by the square of the effective antenna current referred to a specified point.

RESISTANCE BOX.

Rheostat consisting of an assembly of resistors of definite values so arranged that the resistance of the circuit in which it is connected may be changed by known amounts.

RESISTANCE BRAKING.

System of dynamic braking in which the traction motors are used as generators, feeding resistors that dissipate the energy as heat. (Reference: RHEOSTATIC BRAKING.)

RESISTANCE BRIDGE.

Common form of Wheatstone bridge, employing resistances in three arms.

RESISTANCE COUPLING.

1. Method of interconnection between stages in an amplifier which connects the plate of one tube to the grid of the following tube by means of a resistor.

2. Method of transferring energy from one circuit to another by means of resistance common to both circuits. (Reference: RC COUPLING.)

RESISTANCE DROP.

Voltage drop occurring between two points on a conductor due to the flow of current through the resistance existing between those points. Multiplying the resistance in ohms by the current in amperes gives the voltage drop in volts.

RESISTANCE FURNACE.

Electric furnace in which the heat is developed by the passage of current through a suitable resistor, which may be the charge itself, a resistor inbedded in the charge, or a resistor surrounding the charge.

RESISTANCE GROUNDED.

Grounded through a resistance.

RESISTANCE LAMP.

Electric lamp used to prevent the current in a circuit from exceeding a desired limit.

RESISTANCE LOSS.

Power loss due to current flowing through resistance. Its value in watts is equal to the resistance in ohms multiplied by the square of the current in amperes.

RESISTANCE MATERIAL.

Material having sufficiently high resistance per unit length or volume to permit its use in the construction of resistors.

RESISTANCE PAD.

Network employing only resistances. Used to provide a fixed amount of attenuation without altering the frequency response.

RESISTANCE RELAY.

Form of distance delay, the operation of which is a function of the resistance of the circuit between the relay and the fault.

RESISTANCE STANDARD.

Resistor that has been adjusted with high accuracy to a specified value. It is but slightly affected by variations in temperature, and retains its value over long periods of time.

RESISTANCE STRAIN GAGE.

Strain gage consisting of a small strip of special resistance material that is cemented to the part

under test, and changes in resistance with elongation.

RESISTANCE THERMOMETER.

Instrument for measuring temperature, which depends for its operation upon the variation of electric resistance with temperature.

RESISTANCE WELDING.

Board term covering fusion of two metal objects by means of spot, seam, pulsation spot, projection, butt or flash welding. The two pieces to be welded must be held in close contact under pressure. A definite amount of current, seldom less than 1,000 amperes and often as high as several hundred thousand amperes, is passed through the joint for a definite period of time, which is generally controlled by electronic equipment, causing the metal at the joint to soften and permit interlocking of grains.

RESISTANCE WIRE.

Wire made from a metal or alloy having high resistance per unit length, such as nichrome, used in wire-wound resistors, heating elements, etc.

RESISTANCE-CAPACITANCE COUPLED AMPLIFIER.

Vacuum-tube amplifier using resistors and capacitors to couple the various stages.

RESISTANCE-CAPACITANCE COUPLING.

Type of coupling in which a resistor and capacitor provide a path for signal energy between two circuits. (Reference: RC COUPLING.)

RESISTANCE-START MOTOR.

Form of split-phase motor having a resistance connected in series with the auxiliary winding. The auxiliary circuit is opened when the motor has attained a predetermined speed.

RESISTANCE CONDUCTOR.

Conductor that possesses the property of high electric resistance.

RESISTIVE COUPLING.

Association of one circuit with another by means of mutual resistance.

RESISTIVE UNBALANCE.

Unequal resistance in the two wires of a transmission line.

RESISTIVITY.

1. Ability to resist current flow. The reciprocal of conductivity.
2. Specific resistance of a unit specimen of a material. Expressed as ohms per cubic centimeter or ohms per circular mil foot. The resistive property of a material is thus expressed as the number of ohms in a piece one square centimeter in cross section and one centimeter long, or a piece one circular mil in cross section and one foot long.

RESISTOR.

Electrical component, which offers resistance to the flow of current. It may be a coil of fine wire or a composition rod. (Reference: VARIABLE RESISTOR, RESISTANCE.)

ADJUSTABLE. Resistor whose resistance can be changed mechanically. (Reference: ADJUSTABLE VOLTAGE DIVIDER.)

BALLAST. Special type of resistor used in radio apparatus to compensate for fluctuations in ac power line voltage. It is usually connected in series with the power supply to the receiver or amplifier. The ohmic value of a ballast resistor increases rapidly with increases in current through it, thereby tending to maintain essentially constant current despite variations in line voltage.

BIASING. Resistance used to provide the voltage drop for a required bias.

BLEEDER. Resistor which is used to draw a fixed bleeder current. Also used, as a safety measure, to discharge filter condensers after the circuit is de-energized.

CATHODE. Resistance connected in the cathode circuit of a tube so that the voltage drop across it will supply the proper cathode-biasing voltage. (Reference: CATHODE BIAS.)

DROPPING. Resistor used to decrease a given voltage to a lower value.

GRID. General term which denotes any resistor in the grid circuit.

NONINDUCTIVE. Wire-wound resistor which is so constructed that it has practically no inductance.

VARIABLE. Resistor whose electrical value can be changed mechanically.

RESISTOR CORE.

Insulating support on which a resistor element is wound or otherwise placed.

RESISTOR ELEMENT.

That portion of a resistor which possesses the property of electric resistance. It may be pure metal, a metallic coating, a carbon-cement mixture, etc.

RESISTOR FURNACE.

Resistance furnace in which the heat is developed in a resistor that is not a part of the charge.

RESISTOR HOUSING.

Enclosing member that surrounds the resistance element and the core of a resistor.

RESNATRON.

Electron tube used in a super-power transmitter operating in microwaves for use in jamming devices, particularly in the land-base radar countermeasure device known as TUBA.

RESOLUTION.

Measure of the narrowest line width which may be transmitted and recorded.

1. Act of deriving from a sound, scene or other form of intelligence, a series of discrete elements wherefrom the original may subsequently be synthesized.

2. Degree to which nearly equal values of a quantity can be discriminated.

3. Fineness of detail in a reproduced spatial pattern.

4. Degree to which a system or a device distinguishes fineness of detail in a spatial pattern.

AZIMUTH. Angle or distance by which two

targets must be separated in azimuth in order to be distinguished by a radar set, when the targets are at the same range.

RANGE. Distance by which two targets must be separated in range in order to be distinguished by a radar set, when the targets are on the same bearing line.

RESOLVER.

Electromechanical unit, similar to a synchro, used to resolve incoming voltages into their sine and cosine components as referred to angle of shaft rotation. Resolvers may be supplied with two rotor windings for resolution of the sine and cosine components of the vector sum of two quadrature inputs.

RESOLVING CELL.

Volume in space whose diameter is the produce of slant range and beamwidth, and whose length is the pulse length.

RESOLVING POWER.

Measure of the distinctness with which the images of two point sources of light may be separately detected.

RESOLVING TIME.

Minimum time interval, between events, that can be detected. Resolving time may refer to an electronic circuit, to a mechanical recording device, or to a counter tube.

RESONANCE.

Condition in a circuit containing inductance and capacitance where the inductive reactance is equal and opposite to the capacitive reactance. This condition occurs at but one frequency for a given fixed circuit and the circuit is said to be in tune. The in tune frequency may be changed by varying either the capacity or inductance. Internal or circulating currents are a maximum at resonance.

PARALLEL. Steady-state condition which exists in a circuit comprising inductance and capacitance connected in parallel, when the current entering the circuit from the supply line is in phase with the voltage across the circuit.

SERIES. Steady-state condition which exists in a circuit comprising inductance and capacitance connected in series, when the current in the circuit is in phase with the voltages across the circuit.

RESONANCE BRIDGE.

Type of ac bridge having in one arm an inductance and capacitance that are adjusted to resonance at the frequency being used.

RESONANCE CURVE.

Graphical representation illustrating the manner in which a tuned circuit responds to the various frequencies in and near the resonant frequency.

RESONANCE INDICATOR.

Meter indicating condition of resonance. Used with reflectometer, wavemeter, echo box, etc.

RESONANCE RADIATION.

Radiation coming from a gas or vapor, due to excitation, having the same frequency as the resulting radiation. An example is sodium vapor irradiated with sodium light.

RESONANT CAVITY.

Form of resonant circuit in which the current is distributed on the inner surface of an inclosed chamber. By making the chamber of the proper dimensions, the circuit can be made to have a high Q at microwave frequencies. The resonant frequency of a cavity can be changed by the adjustment of screws which protrude into the cavity, or by changing the shape of the cavity.

RESONANT CHARGING CHOKE.

Modulator inductor which, with the effective capacitance of a pulse-forming network, is used to set up an oscillation of a given charging frequency, in order to charge a line to a high voltage.

RESONANT CIRCUIT.

Circuit which contains both inductance and capacitance, and therefore is tuned to resonance at a certain frequency. The resonant frequency will be higher if the inductance or capacitance or both is decreased and the resonant frequency will be lower if the inductance or capacitance or both is increased.

RESONANT CURRENT STEP-UP.

Ability of a parallel-resonant circuit to circulate a current through its inductor and capacitor that is many times greater than the current fed into the circuit.

RESONANT DIAPHRAGM.

Diaphragm, in wave guide technique, so proportioned as to introduce no reactive impedance at the design frequency.

RESONANT FREQUENCY.

1. Frequency, of a crystal unit, for a particular mode of vibration to which, discounting dissipation, the effective impedance of the crystal unit is zero.
2. That frequency, for a given resonant circuit, at which the inductive reactance is equal to the capacitive reactance.

RESONANT FREQUENCY OF A TUBE.

Theoretical highest frequency at which a tube will oscillate, corresponding to complete absence of external capacitance and with circuit inductance reduced to a direct short circuit between the anode and grid terminals. Serves as a figure of merit of a tube as an ultra-high-frequency generator, but is not a practical rating because the tube output is negligible at this frequency.

RESONANT LINE.

Transmission line having values of distributed inductance and distributed capacitance such as to make the line resonant at the frequency it is handling.

RESONANT MODE.

Component of the response of a linear device which is characterized by a certain field pattern, and which when not coupled to other modes is representable as a single-tuned circuit.

RESONANT RESISTANCE.

Resistance value to which a resonant circuit is equivalent.

RESONANT TRANSMISSION LINE.

Resonant line.

RESONANT VOLTAGE STEP-UP.

Ability of an inductor and a capacitor in a series-resonant circuit to deliver a voltage several times

greater than the input voltage of the circuit.

RESONANT-LINE OSCILLATOR.

Oscillator in which one or more sections of transmission lines are employed as resonant elements.

RESONATE.

To bring to resonance, as by tuning.

RESONATING CAVITY.

Short piece of waveguide of adjustable length, terminated at either or both ends by a metal piston, an iris diaphragm, or some other wave-reflecting device. It is used as a filter, as a means of coupling between guides of different diameters, and as impedance networks corresponding to those used in radio circuits. The cross section of the cavity may be circular, rectangular, or any other shape, and long cavities may be coiled or folded.

RESONATING PIEZOID.

Piezoid used as a resonator or oscillator.

RESONATOR.

Apparatus or system in which some physical quantity is capable of being put into a state of oscillation by oscillations in another system.

RESONATOR GRID.

One of the grids attached to cavity resonators in velocity-modulation tube.

RESONATOR WAVEMETER.

Resonator circuit used to determine wave length such as a cavity resonator wavemeter.

RESPONSE.

Quantitative expression, of a device or system, of the output as a function of the input under conditions which must be explicitly stated. The response characteristic, often presented graphically, gives the response as a function of some independent variable such as frequency or direction.

RESPONSE CHARACTERISTIC.

Graph showing the response of a device throughout the range of frequencies normally handled.

RESPONDER.

Receiver intended to receive and interpret the signals from a transponder.

RESPONSIBLE OFFICER.

Officer designated or assigned by competent authority, or who by virtue of his position, is responsible for all federal property issued the unit, and who is specifically charged with its care and safekeeping. Such responsibility is distinguished from that of commanding officers to insure that the property of their unit is properly safeguarded, administered, and accounted for.

RESPONSIBILITY.

1. Obligation to carry forward an assigned task to a successful conclusion. With responsibility goes authority to direct and take the necessary action to insure success.
2. Obligation of an individual for the proper custody, care, and safe-keeping of property or funds entrusted to his possession or under his supervision.

RESPONSIVENESS OF AN INSTRUMENT.

Time required for the pointer of the instrument to come to apparent rest after a specified change in the value of the measured quantity.

RESPONSIVE BARRAGE.

Classified definition. (Reference: AFM 100-50.)

RESPONSOR.

Electronic device used to receive an electronic challenge and to display a reply thereto.

REST POTENTIAL.

Residual potential difference remaining between an electrode and an electrolyte after the electrode has become polarized.

RESTING FREQUENCY.

Initial frequency of the carrier wave of an FM transmitter before modulation. (Reference: CENTER FREQUENCY.)

RESTORING FORCE GRADIENT OF A DIRECT-ACTING RECORDING INSTRUMENT.

Rate of change, with respect to the displacement of the resultant of the electric or electric and mechanical forces tending to restore the marking device to any position of equilibrium when displaced from that position. It should be expressed in grams per centimeter and should be accompanied by statements of the length of the marking

device of millimeters and the position of equilibrium to which it refers.

The force gradient may be constant throughout the entire travel of the recording point, or it may vary greatly over this travel, depending upon the operating principles and the details of construction.

RESTORING TORQUE GRADIENT OF AN INSTRUMENT.

Rate of change, with respect to the deflection, of the resultant of the electric or electric and mechanical torques tending to restore the moving element to any position of equilibrium when displaced from that position. It should be expressed as the rate of change in resultant turning moment in millimetergrams per degree at that position.

RESTRICTED AREA.

1. Area or airspace in which there are special restrictive measures employed to prevent or minimize interferences between friendly forces.
2. Area in which special security measures are employed to prevent unauthorized access to classified information or matter.

RESTRICTED DATA.

Data concerning the manufacture or utilization of atomic weapons, the production of fissionable material in the production of power.

RESULTANT.

Result of two or more forces or vectors.

RESUSCITATION.

Restoring from unconsciousness caused by drowning or electric shock.

RETARD TRANSMITTER.

Transmitter in which a delay period is introduced between the time of actuation and the time of transmission.

RETARDATION COIL.

1. Inductance coil for use in a circuit to discriminate against the flow of alternating current in favor of direct current or to offer an impedance to a varying current.

2. High-inductance coil, in telephone, which offers high impedance to voice-frequency current, but permits the passage of ringing current.

RETARDATION-FIELD OSCILLATOR.

Oscillator capable of generating frequencies up to about 5,000 megacycles. It employs a triode tube in which electrons oscillate or vibrate back and forth through the meshes of a grid that is maintained positive with respect to the cathode. The frequency depends on the transit time of the electrons, and this in turn depends on the electrode dimensions and the voltages at which they are operated.

RETENTIVITY.

Ability of a material to retain its magnetism.

RETICLE.

Mark, such as a cross or system of lines, lying in the image plane of a viewing apparatus.

RETRACE.

Return of a trace on the screen of a CRT to its starting point. Usually blanked out. (Reference; FLY-BACK.)

RETROACTION.

British term for regeneration, involving feedback from the plate circuit to the grid circuit of a vacuum tube or from the output to the input of a vacuum-tube amplifier.

RETURN INTERVAL.

Interval corresponding to the direction of sweep not used for delineation.

RETURN LOSS.

Loss between two paths on a transmission line, in repeater, or terminal equipment. A measurement of return loss will indicate the degree of balance between the line and network of a hybrid. A measure of the gain that can be introduced into a system before singing will occur.

RETURN TO BASE.

Function of directing interceptors back to a selected base.

RETURN TRACE.

Path of the scanning spot, in television, during the return interval.

RETURN WIRE.

Ground wire, common wire, or the negative wire of a dc circuit.

REVERBERATION.

Persistence of sound at a given point, after transmission from the source has ceased. This may be due, in the case of rooms, to repeated reflections from a small number of boundaries or to the free decay of the normal modes of vibration that were excited by the sound source, and in the case of under-water sound, to scattering from a large number of inhomogeneities in the medium or to reflection from bounding surfaces.

REVERBERATION TIME.

Time required, for a given frequency, for the average sound-energy density, originally in a steady-state, to decrease, after transmission from the source has ceased, to one-millionth of its initial value (60 db).

REVERBERATION-CONTROLLED GAIN CIRCUIT.

Circuit used in underwater sound equipment to vary the gain of the receiving amplifier in proportion to the strength of undesired reverberations associated with the desired echo.

REVERBERATION-TIME METER.

Electronic instrument for measuring reverberation time directly.

REVERSAL.

Changing the direction of transmission or polarity.

REVERSE BATTERY SUPERVISION.

Form of supervision in which supervisory signals are furnished from the terminating end of the originating end by reversing the direction of current flow over the trunk.

REVERSE CURRENT.

Current which flows upon application of reverse voltage.

REVERSE KEY.

Key used in a circuit to reverse the polarity of that circuit.

REVERSE VOLTAGE.

Voltage of that polarity which produces the smaller current.

REVERSE-CURRENT RELAY.

Relay that operates whenever current flows in the reverse direction.

REVERSED FEED-BACK AMPLIFIER.

Amplifier employing inverse feedback to reduce harmonic distortion and otherwise improve fidelity. (Reference: NEGATIVE FEEDBACK.)

REVERSIBLE BOOSTER.

Booster capable of adding to and subtracting from the voltage of a circuit.

REVERSIBLE MOTOR.

Motor in which the direction of rotation can be reversed by operating a switch that changes motor connections.

REVERSIBLE PROCESS.

Reversible electrolytic process is an electrochemical reaction which takes place reversibly at the equilibrium electrode potential.

REVERSIBLE TRANSDUCER.

Transducer which satisfies the principles of reciprocity.

REVERSING LAYER OF SUN'S ATMOSPHERE.

Thin layer above the photosphere. It absorbs energy of certain frequencies emitted by the photosphere making lines (which otherwise would appear bright) dark in spectrographs.

REVERSING SWITCH.

Switch used to change the direction of rotation of a motor, to change the direction of any form of motion, or to change the polarity of circuit connections.

REVERTING CALL.

Call made to a party on the same line as the calling party. This is seldom found in PBX service.

REVISION.

Complete publication superseding a previous edition.

REVOCABLE LICENSE.

Written instrument granting authority for the installation, maintenance, and operation of public telephones and telegraph facilities, and for the

private or commercial use of Air Force-owned communication facilities and Air Force-owned or furnished utilities and related service required therewith.

REWRITE.

Storage device, in an electronic computer, whose information storing state may be destroyed by reading, the process of restoring the device to its state prior to reading.

RF (RADIO FREQUENCY).

Frequency in which radio transmission is useful for communication purposes. The useful range is from approximately 10 kilocycles to 300,000 megacycles.

RF (RADIO-FREQUENCY) BANDWIDTH.

Band of frequencies comprising 99 percent of the total radiated power extended to include any discrete frequency on which the power is at least 0.25 percent of the total radiated power.

RF (RADIO-FREQUENCY) CAVITY PRESELECTOR.

UHF circuit component which is similar in function to a tuned resonant circuit. A tunable cavity.

RF (RADIO-FREQUENCY) CHOKE.

Coil having a high inductive reactance for radio frequencies and used to prevent radio-frequency currents from passing from one circuit to another.

RF (RADIO-FREQUENCY) HEAD.

That part of a radio equipment containing components concerned in the reception and transmission of carrier frequencies.

RF (RADIO-FREQUENCY) LINE.

1. System of metallic tubes (waveguides and/or coaxial lines) which conducts RF energy from one point to another (Reference: PLUMBING.)
2. Metallic conductor used to transmit RF energy from one point to another.

RF (RADIO-FREQUENCY) PLUMBING.

Radio-frequency transmission lines and associated equipment in the form of waveguides.

RF (RADIO-FREQUENCY) PROBE.

(Reference: PROBE.)

RF (RADIO-FREQUENCY) PULSE.

Train of radio-frequency oscillations whose envelope has the form of pulse.

RFA (RADIO FREQUENCY AUTHORIZATION).

Assignment of available frequencies in the radio spectrum to specific stations and for specific purposes, to give maximum utilization of frequencies with minimum interference between stations. Allocations in the United States are made by the Federal Communications Commission.

RG.

ITU designation for Radio Direction Finding Station.

RG (RANGE).

1. Capability of an aircraft indicating how far it can fly under given operating conditions.
2. Distance to which aircraft attached to an air base can fly and operate effectively.
3. Capability of a rocket or guided missile indicating how far it can be projected or fly.

RHB (RADAR HOMING BOMB).

Bomb equipped to fix on target by means of radar emanations.

RHEOSTAT.

1. Resistor whose value can be varied.
2. Variable resistor which is used for the purpose of adjusting the current in a circuit.

RHEOSTATIC BRAKING.

System of dynamic braking in which the traction motors are used as generators, and feeding resistors that dissipate the energy as heat. (Reference: RESISTANCE BRAKING.)

RHEOTRON.

Induction electron accelerator.

RHO-THETA.

In connection with navigational system, this term refers to OMNI-BEARING-DISTANCE NAVIGATION. This is radio navigation utilizing a polar-coordinate system as a reference, and making use of omni-bearing-distance facilities. The position of the plane is determined by bearing or direction of the ground station and the distance to it.

RHOMBIC ANTENNA.

Directional antenna composed of long wire radiators comprising the sides of a rhombus, the two halves of the rhombus being fed equally in opposite phase at an apex. The antenna is usually terminated in an impedance.

RHUMB LINE.

Line which cuts successive meridians at the same angle.

RHUMBATRON.

Resonator of the hollow-cavity type in which rhythmic oscillations are induced.

RIBBON MARKER.

Intensified annular segment, in radar, of precision PPI (model VF), indicating B-scope area.

RIBBON MICROPHONE.

Moving conductor microphone in which the moving conductor is in the form of a ribbon which serves also as the moving acoustic element.

RICE NEUTRALIZING CIRCUIT.

Radio-frequency amplifier circuit that neutralizes the grid-to-plate capacitance of the amplifier tube.

RICHARDSON EFFECT.

Emission of electrons from hot bodies increases rapidly with temperatures. (Reference: EDISON EFFECT.)

RICHARDSON EQUATION.

Expression for the density of thermionic emission at saturation current, in terms of the absolute temperature of the filament.

RIDE GAIN.

Control the volume range of a radio program while watching a volume indicator, so that the resulting audio-frequency signal is neither too weak nor too strong for most effective handling by transmission equipment in a radio system.

RIDGE.

Meteorological term for a relatively narrow extension of an anticyclone or high-pressure area as shown on a weather chart.

RIGHT ASCENSION.

In air navigation, the arc of the celestial equator, or the angle at the celestial pole, measured eastward from the hour circle of the vernal equinox (Sense I) to the hour circle of a given celestial body, either through 24 hours or 360 degrees.

RIGHT HAND RULE.

1. For motors and generators; if the thumb, first, and second fingers of the right hand are extended at right angles to one another, with the thumb representing the direction of motion, the first finger representing the direction of the magnetic lines of force, and the second finger representing the direction of the electron current, the relations between the directions will then be correct for a conductor in the armature of a generator or motor.

2. For a current-carrying wire; if the fingers of the left hand are placed around the wire in such a way that the thumb points in the direction of current flow, the fingers will be pointing in the direction of the magnetic field. (The above are based on so-called conventional current flow, not electron flow.)

RIGHT HAND TAPER.

Potentiometer or rheostat having higher resistance in the clockwise half of its rotational range than in its counter-clockwise half, looking at the shaft and knob end.

RIGHT-HANDED ELLIPTICALLY POLARIZED WAVE.

Elliptically polarized radio wave in which the rotation of the direction of displacement is clockwise for the observer looking in the direction that the wave is traveling.

RIGHT-HANDED QUARTZ.

Quartz which rotates the plane of polarization to the right (clockwise) on looking back toward the source of light.

RIGID STEEL CONDUIT.

Raceway specially constructed for the purpose of pulling in or withdrawing of wires or of cables after the conduit is in place. Made of mild steel pipe of standard weight and thickness and has

enamel and / or metallic corrosion - resistant coatings.

RIM DRIVE.

Driving a turntable of a phonograph or sound recorder by means of a small rubber-covered wheel that is on the shaft of an electric motor, and is in contact with the rim of the turntable.

RING.

1. Audible signal.
2. Second conductor of a pair.
3. Circular ring of a plug back of and insulated from the tip.
4. Negative or battery side of a telephone line.

RING ARMATURE.

Obsolete armature design consisting of a ring-shaped or tubular iron core wound with wire passing over the surface and through the interior of the core.

RING CIRCUIT.

Ring circuit, in waveguide practice, is a hybrid T having the physical configuration of a ring with radial branches.

RING COUNTER.

Re-entrant multi-stage circuit consisting of any number of stages arranged in a circle so that a unique condition is present in one stage, and each input pulse causes this condition to transfer one unit around the circle.

RING DOWN.

Circuit signaling where the signaling and supervision is controlled by ringing current.

RING DOWN CIRCUIT.

Circuit in which the signalling is with manually applied ringing current of 16, 20, 135, or 1,000 cycles.

RING FILTER.

Filter, in waveguide techniques, in the form of a resonant metallic ring or rings.

RING OSCILLATOR.

Arrangement of two or more pairs of tubes operating as push-pull oscillators around a ring, usually with alternate successive pairs of grids

and plates connected to resonant circuits. Adjacent tubes around the ring operate in phase opposition. The load is supplied by coupling to the plate circuits.

RING SEAL.

Fused junction between the two halves of a bulb, in the form of a circle of large diameter at or near which the electrode leads emerge from the bulb.

RING SIDE.

Conductor of a circuit which is associated with the ring of a plug or the ring spring of a jack.

Note. By extension, it is common practice to designate by these terms the conductors having similar functions or arrangements in circuits where plugs or jacks may not be involved.

RING STRAP.

Ring-shaped strap connecting the ends of alternate segments of the anode of a cavity magnetron.

RING SWITCH.

Resonant ring located in a waveguide system which by rotation controls the flow of energy.

RING TELEVISION.

Code name for a type of aerial television. Ring equipment transmits clear television pictures up to 200 miles.

JUMPER. Loops of insulated steel through which cross-connections are passed for securing.

RINGDOWN.

That method of signaling an operator in which telephone ringing current is sent over the line to operate a drop or a self-locking relay and lamp.

RINGER.

1. Subscriber's bell.
2. Repeating device which receives current of one frequency and sends another frequency to the next circuit.

STATIC. Ringer with no moving parts other than overload relay; cannot be operated under overloads

RINGING.

1. Production of an audible or visible signal at a station or switchboard by means of an alternating or pulsating current.
2. Damped oscillation occurring in the output signal of a system as a result of a sudden change in input signal.
3. Ringing (Telephone). PABX's and PBX's utilize single frequency ringing of either 20 to 30 cycles. The ringer in the subset will operate when ringing voltage of that frequency is applied to the line. If more than one party, other than a bridged extension, is on the line, signaling can be accomplished by code ringing. This means that the ringing voltage is interrupted into a combination of long and short rings, with a specific combination assigned to each station on the line. This is similar to the old magneto hand cranking telephone signaling method. The code to be sent out over the line is determined by which ringing digit is dialed (one of the digits comprising the station number, usually the last one).

SELECTIVE OR SEMI-SELECTIVE. Method of applying ringing current to either the tip or the sleeve of the subscriber's line.

RINGING CODE.

System of spaced rings to call in different subscribers on the same line.

RINGING CURRENT.

1. Alternating current generally of 16 or 20 cycles and various voltages which may or may not be superimposed on a direct current for four party ringing.
2. Ringing supply of various frequencies which is used on party line with subscriber's sets which are equipped with ringing relays which will operate at the various ring frequencies only.

RINGING INDUCTION.

1. Noise interference directly traceable to a source of ringing supply.
2. Small portion of the ringing current which is returned to the calling subscriber as an indication that the called party is being rung.

RINGING KEY.

Key whose operation sends ringing current over the circuit to which the key is connected.

RINGING OSCILLATOR.

Oscillator circuit containing an LC resonant combination in the cathode circuit, usually used in radar equipment to provide range marks.

RINGING TONE.

Tone sent to a caller to indicate that the called line is being signaled.

RINGTIME.

Interval between the start of the transmitted pulse and the instant at which the energy re-radiated from an echo box, or other high-Q resonant cavity, falls below the minimum values which will produce an indication in a radar receiver.

RIPPLE.

Periodic fluctuation on a dc voltage which results from incomplete filtering in a power rectifier set, or from the bars of the commutator or a dc generating machine. The magnitude of ripple is expressed as the ratio of its effective value to the average value of the total dc voltage, in percent.

RIPPLE CURRENT.

Ac component of a pulsating current when this component is small relative to the direct-current component.

RIPPLE FILTER.

Low-pass filter designed to reduce the ripple current, while freely passing the direct current, from a rectifier or generator.

RIPPLE FREQUENCY.

Frequency of the ripple current; twice the supply frequency, in the case of a full-wave rectifier, and a function of the number of poles and the speed, in the case of a generator.

RIPPLE QUANTITY.

Alternating component of a pulsating quantity when this component is small relative to the continuous component.

RIPPLE RATION.

Ratio of a ripple quantity is the ratio of the difference between the maximum and minimum values of the quantity to the average value.

RIPPLE VOLTAGE.

1. Fluctuations in the output voltage of a rectifier, filter, or generator.
2. Alternating component of a substantially unidirectional voltage.

RISE TIME.

Time required for the leading edge of a square wave input to rise to some percentage of its final value on the indicator. Usually taken as the time for the output to rise from 10% to 90% of its final value.

RISER CABLE.

Vertical portion of a house cable extending from one floor to another.

RISING CHARACTERISTIC.

Characteristic in which the voltage rises as the current increases, as in an overcompounded generator.

RISING-SUN MAGNETRON.

Vane-type magnetron in which the cavities are alternately shallow and deep, there being two values of radial depth.

RKT (ROCKET).

Jet-propelled vehicle which contains within itself all the material for production of exhaust gases.

RL (FULL POWER LOOP RANGE).

Designation for radio range using two separate loop antennas, utilizing a single transmitter, operating at a power of 150 watts or more.

RL.

ITU designation for radio navigation land station.

RLA.

ITU designation for aeronautical marker beacon.

RLB

ITU designation for aeronautical radio beacon station.

RLC.

ITU designation for RACON station.

RLG.

ITU designation for glide path (slope) station.

RLL.

ITU designation for localizer station.

RLM.

ITU designation for marine radio beacon station.

RLN.

ITU designation for LORAN station.

RLO.

ITU designation for omni-direction range station.

RLS.

1. ITU designation for radio range station.
2. ITU designation for surveillance radar station.

RM.

ITU designation for maritime radio navigation mobile station.

RMA (RADIO MANUFACTURERS ASSOCIATION).

RMG (RADAR MAPPER GAP FILLER).

Airman, in air defense, in the direction center air surveillance branch responsible for mapping out unwanted gap-filler-data on the mapping console.

RMI (RADIO MAGNETIC INDICATOR).

Indicating instrument which presents a display combining vehicle heading relative-bearing, and omni-bearing of the radio station being utilized for navigation purposes.

RML (RADAR MAPPER LONG RANGE).

Airman at a long-range-radar site responsible for mapping out unwanted radar data which would not otherwise be eliminated from the computer by programmed masking action.

RMS (ROOT-MEAN-SQUARE).

Root-mean-square or effective value for a sine wave is 0.707 times the maximum value.

RMS (ROOT-MEAN-SQUARE) AMPLITUDE.

Amplitude of an ac wave which may be used

for an accurate computation of power in watts. In communications particularly, with complex waves involved, the RMS amplitude of a current is said to be that current which is computed from a measurement of power dissipated in a known resistance as a result of that current. Often called the effective value.

RN (REFERENCE NOISE).

Magnitude of circuit noise that will produce a circuit noise meter reading equal to that produced by 10^{-12} watt of electrical power at 1,000 cycles per second.

RNFP (RADAR NOT FUNCTIONING PROPERLY).

Priority requisition submitted for parts required to keep the basic radar and associated communications equipment at a point where continuous efficient operation can be accomplished. Such requisitions will be identified with the abbreviation RNFP as a prefix to the requisition number. For the purpose of this regulation, RNFP requisitions are considered to be secondary in importance to ROCP requisitions.

RNG (RADIO RANGE).

Radio transmitter that provides radial equisignal zones.

RO.

ITU designation for radio-navigation mobile station.

ROA.

ITU designation for altimeter station.

ROBINSON DIRECTION FINDER.

Radio direction finder in which the antenna consists of two coils at right angles, rotatable individually and as a whole. A motor-driven commutator reverses connections to one coil rapidly. Coil positions are adjusted until this reversal has no effect on the strength of the received signal as indicated by a galvanometer.

ROBINSON-ADCOCK DIRECTION-FINDER.

Robinson direction-finder.

ROCCM (CONTROLLED-DEVICE COUNTERMEASURES).

Electronic countermeasures against guided missiles, pilotless aircraft, proximity fuzes, or similar devices.

ROCHELLE SALT CRYSTAL.

Crystal of sodium potassium tartrate, having a pronounced piezoelectric effect, extensively used in crystal microphones and crystal photograph pickups. Perfect crystals up to four inches and more in length can be grown artificially.

ROCKET.

Jet-propelled vehicle which contains within itself all the material for production of exhaust gases.

ROCKING.

Back-and-forth rotation of the tuning control in a superheterodyne receiver while adjusting the oscillator padder near the low-frequency end of the tuning dial, to secure more accurate alignment.

ROCKOON.

Rocket fired into space from a balloon at high altitudes.

ROCKY POINT EFFECT.

Transient but violent discharges between electrodes in high voltage transmitting tubes.

ROCP (RADAR OUT OF COMMISSION FOR PARTS).

Priority requisition submitted for parts required to return a basic radar facility (and associated communications equipment) to an operation status when the site is not capable of performing its assigned mission. Such requisitions will be identified with the abbreviation ROCP as a prefix to the requisition number.

ROD GAP.

Spark gap in which the electrodes are two coaxial rods, with ends between which the discharge takes place, cut perpendicular to the axis.

RODOMETER.

Instrument devised to use light-figures from an etched surface to find the hand and piezo-electrical axes of quartz.

ROENTGEN.

Unit of electromagnetic radiation which will produce one electro-static unit of ions in a cubic centimeter of air under standard conditions of temperature and pressure. One electro-static unit of charge is 2×10 ion pairs.

ROENTGEN MACHINE.

Medical term for an X-ray machine.

ROENTGEN METER.

Instrument for measuring the quantity or intensity of roentgen rays (X-rays or gamma rays). (Reference: IONOMETER, ROENTGENOMETER.)

ROENTGEN RAYS.

Penetrating radiations similar to light, having wavelengths of the order of a thousandth to a millionth of those of light in the visible spectrum (10^{-7} to 10^{-10} CM). In practice they are usually generated by allowing a stream of high-speed electrons to impinge on a metal target.

ROENTGENIZATION.

Discoloration of glass after prolonged irradiation with X-rays.

ROENTGENOGRAM.

Photographic record of the relative transparency of the various parts of an object to roentgen rays (X-rays).

ROENTGENOGRAPHY.

Art of producing roentgenograms (X-ray photographs).

ROENTGENOLOGY.

Branch of science which relates to the application of roentgen rays for diagnostic or therapeutic purposes.

ROENTGENOMETER.

Instrument for measuring the quantity or intensity of roentgen rays (X-rays). (Reference: IONOMETER, ROENTGEN METER.)

ROENTGENOSCOPE.

Device consisting of a fluorescent screen mounted either separately or in conjunction with an X-ray

tube. The shadows of object interposed between the tube and the screen are made visible on the screen by the X-ray radiation.

ROETGENOSCOPY.

The use, in diagnosis, testing, etc., of a fluorescent screen that is activated by roentgen rays (X-rays).

ROENTGENOTHERAPY.

Treatment of disease by roentgen rays (X-rays).

ROLL.

Strip of rope wound around a core. A number of rolls, packed in a container, form a unit of window.

ROLLING TRANSPOSITION.

Transposition in which the conductors of an open wire circuit are physically rotated in a substantially helical manner. With two wires, a complete transposition is usually effected in two consecutive spans.

RON (REMAIN OVERNIGHT).

1. Flight in which the aircraft remains overnight away from its home station.
2. Hospital where patients remain overnight when in the process of being transported by air.

ROOSTER.

Airborn radar homing beacon. The ROOSTER, or aircraft equipped with the beacon is used for homing of other aircraft by means of the radar beacon.

ROOT MEAN SQUARE.

Effective value of a sine wave is .707 times the maximum value.

ROOT-MEAN-SQUARE VALUE.

Effective value of an alternating current, corresponding to the dc value that will produce the same heating effect. Unless otherwise specified, alternating quantities are assumed to be root-mean-square values.

ROPE.

Electromagnetic-wave reflectors consisting of long strips of metal foil. A small parachute or other device may be attached to each strip to

reduce rate of fall. (Reference: CONFUSION REFLECTOR.)

ROPE-LAY CONDUCTOR.

Cable composed of a central core surrounded by one or more layers of helically laid groups of wires. This kind of cable differs from a concentric-lay conductor in that the main strands are themselves stranded. In the most common type of rope-lay conductor or cable, all wires are of the same size and the central core is a concentric-lay conductor.

ROSEBUD MARK 2.

Airborne radar coded beacon, AN/APN-19, with a reliable range of 100 miles line-of-light. The peak power output is 50 watts, and the set operates in the 2700-3400 MC band. It enables fighter aircraft to be located and identified by suitably modified ground radars AN/CPS-1 and -6 and SCR584 at ranges greater than normal for large aircraft. The set weighs 30 pounds.

ROSIN CONNECTION.

Connection of a conductor to a piece of equipment or another conductor, supposedly securely soldered, but actually held together by rosin flux.

ROSIN CORE SOLDER.

Solder in tubular form, the center filled with rosin and, therefore, self fluxing.

ROSIN JOINT.

Connection of a conductor to a piece of equipment or another conductor, supposedly securely soldered, but actually held together by rosin flux.

ROTARY BEAM ANTENNA.

Highly directional short-wave antenna system mounted on a mast in such a manner that it can be rotated to any desired position either manually or by an electric motor drive.

ROTARY CAPACITOR.

Name sometimes applied to a synchronous motor operated to draw a leading current like that of a capacitor in order to improve power factor.

ROTARY CONVERTER.

Rotating electric machine having a single arma-

ture containing both a commutator and slip rings. If driven by a motor or engine, both ac and dc power may be obtained from it simultaneously.

ROTARY DIAL SYSTEM.

Type of dial telephone system in which the switching apparatus is generally characterized by the following features:

1. Brushes of the selecting mechanisms are moved in a circular arc by a rotating member.
2. Selecting mechanisms are driven by power apparatus.
3. Dial pulses are received and stored by controlling mechanisms which govern the subsequent operations necessary in establishing a telephone connection.

ROTARY FIELD.

Magnetic field that can be represented by a rotating magnetic-intensity vector, as the field of an induction motor.

ROTARY GAP.

(Reference: SPARK GAP.)

ROTARY MAGNET.

Electromagnet of a two-motion stepping switch which, each time it operates, causes the switch shaft to step its wipers one rotary step.

ROTARY PHASE CONVERTER.

Machine which converts power from an ac system of one or more phases to an ac system of a different number of phases, but of the same frequency.

ROTARY SPARK GAP.

Device in which several electrodes mounted on a wheel are rotated past a fixed electrode, producing periodic spark discharges. Used in radar modulators.

ROTARY SWITCH.

Bank and wiper switch with wipers or brushes that move only on the arc of a circle.

ROTARY SYNCHROSCOPE.

Instrument having two windings, one connected to an ac power line and the other connected to an alternator that is to be synchronized with the

power line. The pointer of the instrument rotates slowly in one direction if the incoming machine is too fast, and in the other direction if too slow. When the pointer is stationary, synchronism and switching may be performed.

ROTARY SYSTEM.

Automatic telephone switching system that is generally characterized by the following features:

1. Selecting mechanism are rotary switches.
2. Switching pulses are received and stored by controlling mechanisms which govern the subsequent operations necessary in establishing a telephone connection.

ROTARY TRANSFORMER.

Term sometimes applied to a rotating machine used to transform dc power from one voltage to another.

ROTARY VOLTMETER.

Type of electrostatic voltmeter used for measuring high voltages.

ROTATABLE TRANSFORMER.

Motorlike device having a single-phase, salient-pole rotor and a two-phase, two-pole, high-impedance stator winding.

ROTATING BEACON.

Light beacon having a flashing beam characteristic brought about by mechanical rotation of the optical system about a vertical axis.

ROTATING DIRECTION FINDER.

Direction finder in which the loop antenna is rotated for the purpose of taking bearings.

ROTATING ELEMENT OF A METER.

That part of the meter element which rotates. In a watt-hour meter the element rotates at a speed substantially proportional to the power being integrated by the meter. In an ampere hour meter the element rotates at a speed substantially proportional to the current being integrated by the meter.

ROTATING FIELD.

Name applied to the magnetic field in the stator

of induction motors. The field appears to rotate around the stator from pole to pole because of excitation from a polyphase source.

ROTATING JOINT.

Device for permitting one section of a transmission line to rotate continuously with respect to the other and still maintain RF continuity.

ROTATING RADIO BEACON.

Radio transmitter arranged to radiate a concentrated beam that rotates in a horizontal plane at constant speed and to transmit different signals in different directions so that ships and aircraft can determine their bearings without the use of directional receiving equipment.

ROTATING-LOOP RADIO TRANSMITTER.

Type of rotating radio beacon from which aircraft can determine their bearings by the time elapsed between reception of a nondirectional signal coinciding with the north position of the beam and the directional signal of the rotating beam itself.

ROTATION DIAGRAM.

Photographic record of diffracted beams produced when a slender beam of X-rays is directed on a rotating single crystal. A special type of Laue pattern.

ROTATION SPECTRUM.

X-ray spectrum of diffraction pattern obtained when an X-ray is sent through a rotating crystal.

ROTATIONAL QUANTUM NUMBER.

Quantum number that determines the total angular momentum of a molecule exclusive of nuclear spin.

ROTOFLECTOR.

Rotating reflector, in radar, elliptically shaped, used to reflect at right angles a vertically directed radar beam so that it radiates in a horizontal direction.

ROTOR.

1. Disc designed to rotate within an electrical cipher machine with a set of input contacts and a set of output contacts, connected by any prearranged scheme.

2. Disc, the rotation of which produces a variation of some cryptographic elements in a cipher machine usually by means of lugs (or pins) in or on its periphery.

3. Rotating member of a machine, such as the armature of a motor or the rotating plates of a variable capacitor.

ROTOR ALIGNMENT

Setting of the rotors with reference to a benchmark.

ROTOR PLATES.

Rotating plates of a variable capacitor.

ROUGH QUARTZ.

Used in reference to masses of quartz without crystal faces.

ROUND CONDUCTOR.

Either a solid or stranded conductor of which the cross section is substantially circular.

ROUND ROBIN.

Track classification for a nonstop flight of an airborne object or formation which will take off and land at the same place.

ROUND TRIP ECHOES.

Multiple reflection echoes produced when the radar pulse is reflected from a target strongly enough so that the echo is reflected back to the target where it produces a second echo. As many as four round trips have been observed, producing on the indicator a series of pips on the same bearing which are at the true range, twice the true range, etc. These echoes decrease markedly in size on each succeeding round trip because of the great attenuation involved in the several reflections.

ROUTE DIAGRAM.

Map or overlay for signal communication operations that shows the actual routes and type of construction of wire circuits in the field. (Reference: MAP, LINE ROUTE.)

ROUTE SURVEY.

Detailed survey for a pole line, along the path suggested by a preliminary sketch, incorporating modifications necessary for competition of construction plans.

ROUTINE.

1. Message precedence designation. (Reference: PRECEDENCE DESIGNATIONS.)
2. Set of coded instructions arranged in proper sequence to direct the computer to perform a desired operation or series of operations.

ROUTINE DESTRUCTION.

Burning or otherwise rendering useless of obsolete or surplus cryptographic material, as ordered by the office of issue.

ROUTINE-STOCK REPLENISHMENT REQUISITION.

Request initiated by the base supply officer for the replenishment of base stocks when the re-order point of an item has been reached. Specified delivery dates will not be required. Supply priority 16 will be indicated.

ROUTING.

Process of determining and prescribing the path or method to be used in forwarding messages.

ROUTING INDICATOR.

Group of letters engineered and assigned to identify a station within a teletypewriter network.

ROUTINE LINE.

Procedure line which contains the routing indicators of the station to which a transmission is routed.

ROWLAND RING.

Sample of magnetic material, prepared in the form of a ring in order to test its magnetic properties during use as the core of a transformer.

RP (PLATE RESISTANCE).

The resistance in ohms of the path through space between the plate and cathode of a vacuum tube.

RP (REPORTING POST).

Radar installation capable of providing medium/high altitude medium range radar cover. Low cover to be consistent with line of sight ranges and siting restrictions. A reporting post must be capable of performing the functions of radar surveillance and raid reporting.

RP-CL (REPORTING POST-COASTAL LOW).

Radar installation capable of providing low altitude (up to 1,500 feet), short range cover. Reporting Post-Coastal Low must be capable of performing the functions of radar surveillance and raid reporting. The functions of this installation may also include reporting of surface vessel movements.

RP-CM (REPORTING POST-COASTAL MEDIUM).

Radar installation capable of providing low altitude (up to 5,000 feet) short range cover. Reporting Post - Coastal Medium must be capable of performing the functions of radar surveillance and raid reporting.

RPD (RADAR PLANNING DEVICES).**RPIO (REGISTERED PUBLICATION ISSUING OFFICE).****RPM (REVOLUTIONS PER MINUTE).****RPMIO (REGISTERED PUBLICATIONS MOBILE ISSUING OFFICE).****RPS (REGISTERED PUBLICATIONS SECTION).****RPS (REVOLUTIONS PER SECOND).****RPT (REPEAT).**

To say, utter, send, or do over again what has been said, uttered, or done.

RPT (REPORT).

1. Official account or statement of facts about a particular subject.
2. To make an official account or statement of facts.
3. To appear; present oneself.

RPU (REGISTERED PUBLICATIONS UNIT).**RQC (RADAR QUALITY CONTROL).**

Quality control program of an AC&W unit to insure proper operation of the radar.

RQMT (REQUIREMENT).

Need or demand for personnel, equipment and supplies, resources, facilities, or service, by specific quantities for specific periods of time, or at specified times.

RSC (RESCUE).

1. Free from confinement, violence, or danger.
2. Regain or recover.

RSW (RESISTANT TO SALT WATER).

RT.

ITU designation for revolving radio beacon

RT BOX.

Standard TR tube contained in a cavity with no output circuit. The RT box is placed on the line between the TR and the magnetron, and $1/4$ wavelength away from the TR box. It is part of the duplexing system and prevents radar echoes from feeding into the magnetron.

RT SWITCH.

(Reference: TR BOX.)

RTB (RETURN TO BASE).

Air defense term which is the function of directing interceptors back to a selected base.

RTCA (RADIO TECHNICAL COMMISSION FOR AERONAUTICS).

Cooperative association of all US Government and industry aeronautical telecommunications agencies formed to conduct studies in connection with problems in aeronautical radio communications, aids to navigation, and air traffic control.

RTT (RADIO TELETYPEWRITER).

(Reference: RADIOTELETYPE.)

RTTY (RADIO TELETYPE).

1. Teletype or teletypewriter actuated by radio impulses.
2. Communication system employing this device.

R&U (REPAIRS AND UTILITIES).

Activities taken with respect to the repair, rehabilitation, and maintenance of buildings, structures, grounds, utility systems, and other rear property.

RUBIDIUM.

Photosensitive metal sometimes used on the cathode of a phototube when maximum response to blue-green light is desired.

RUG.

AN/APQ-2.

RUHMKORFF COIL.

Induction coil having a magnetic interrupter. It is used to produce a spark discharge across an air gap.

RUMBLE.

Low-frequency vibration, mechanically transmitted to a recording or reproducing turntable and superimposed on the reproduction.

RUMFORD PHOTOMETER.

Type of photometer in which the shadows cast by a standard light source and the light source under test are compared and brought to equality by varying the relative distances of the sources from the screen.

RUMPF.

Very stable electron group which remains when a chemically active atom is ionized by the removal of its incomplete outer shell of electrons.

RUN MOTOR.

Run motor in facsimile equipment supplies the power to drive the scanning or recording mechanisms. A synchronous motor is used to limit the speed.

RUNNING SHEETS.

Tabular form showing the cross connections to be made at the CDF.

RUNWAY LOCALIZING BEACON.

Small radio-range beacon used to provide accurate directional guidance along the runway of an airport and for some distance beyond.

RUNWAY SUPERVISORY UNIT.

Facility used to provide pilot instruction during aircraft launch and recovery.

RURAL LINE.

Party line serving subscribers in a rural area.

RUS (MOBILE RUNWAY SUPERVISORY UNITS).

Facility used to provide pilot instruction during aircraft launch and recovery.

RUTHERFORD-BOHR ATOM.

Atom as conceived by Bohr and Rutherford,

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consisting of a positive nucleus about which circulates a number of orbital electrons. (Reference: BOHR ATOM.)

RW (RADIOLOGICAL WARFARE).

Warfare waged by the employment of, and de-

fense against, weapons that produce radioactivity, such as atomic bombs or shells.

RWY (RUNWAY).

Surface area on land, snow, or ice used for the takeoff and landing of landbased aircraft.

S

S

S (COMPOSITE CABLE).**S (SIMULTANEOUS).**

Range signal and voice type transmitter.

S (SINGLE-SILK COVERED).

Used to identify single-strand, silk-covered wire or cable.

S (SPECIAL).

Track classification for friendly, airborne objects on which flight-following reporting and forward tell is specified and requested by the NORAD combat operations center.

S METER.

Meter used in some communication receivers to indicate the strength of the received signal in arbitrary units.

S/N (SIGNAL-TO-NOISE RATIO).

Ratio of the value of the signal to that of the noise.

Note 1. This ratio is usually expressed in terms of peak values in the case of impulse noise, and in terms of the root-mean-square values in the case of the random noise.

2. Where there is a possibility of ambiguity, suitable definitions of the signal and noise should be associated with the term, as: Peak-signal to peak-noise ratio; root-mean-square signal to root-mean-square noise ratio; peak-to-peak signal to peak-to-peak noise ratio, etc.

3. This ratio is often expressed in decibels.

4. This ratio may be a function of the bandwidth of the transmission system.

SA (SECRETARY OF THE ARMY).

Civilian head of the Department of the Army.

SAAMA (SAN ANTONIO AIR MATERIEL AREA).

Air materiel area with headquarters at San Antonio, Texas.

SAB (SCIENTIFIC ADVISORY BOARD).

Board that advises the Chief of Staff, USAF, upon scientific matters.

SABIN.

Measure of the sound absorption of a surface. It is the equivalent of one square foot of a perfectly absorptive surface.

SAC (STRATEGIC AIR COMMAND).**SAC-MIKE.**

Strategic Air Command ballistic missile staff, at BMD, Inglewood, Calif.

SACAD (SAC COLLECTIVE CALL).

SAC designation for collective calls.

SACCOMNET (USAF STRATEGIC AIR COMMAND COMMUNICATIONS NETWORK).**SACEUR (SUPREME COMMANDER, EUROPE).**

Commander superior in authority to all others in the European Command.

SACLANT (SUPREME ALLIED COMMANDER, ATLANTIC).

Commander superior in authority to all other allied commanders in the Atlantic Command.

SACPHOTONET (USAF STRATEGIC AIR COMMAND TELEPHOTO NETWORK).**SACRAMENTO AIR MATERIEL AREA.**

Air materiel area with headquarters at Sacramento, California.

SAF (SECRETARY OF THE AIR FORCE).

Civilian head of the Department of the Air Force.

SAFETY BELT.

Heavy adjustable belt passed around a pole and snapped to the D-rings of the body belt.

SAFETY CENTER.

Coordinated activity consisting of an air route traffic control center and a rescue coordination center.

SAFETY COMMUNICATIONS EQUIPMENT.

Police, fire, and mobile two-way radio.

SAFETY FACTOR.

Amount of load, above the normal operating factor, that a device can handle without failure.

SAFETY LEVEL OF SUPPLY.

That quantity (in addition to the operating level)

of materiel required to permit continued operations during minor interruption of normal replenishment or unpredictable fluctuations in supply demand.

SAFETY SERVICE.

Any permanent or temporary radio service, the operation of which is directly related to the safety of human life and the safeguarding of property, shall be considered a safety service.

SAG.

1. Slack placed in aerial cable or open wire, pole-line construction to compensate for contraction caused by adverse weather conditions.

2. Vertical distance between the lowest point on an overhead line and the point of suspension.

SAG GAGE.

Device, used in pole-line work, that is suspended from a cross arm to measure wire sags.

SAGE (SEMI-AUTOMATIC GROUND ENVIRONMENT).

Portion of air defense that provides the means for the semi-automatic processing of data and weapon control. This system was formerly referred to as the LINCOLN transition system. It consists of the following: a. Facilities required to process and transmit air surveillance data from existing and planned data-gathering sources to direction centers: b. Direction centers where air surveillance data, by means of electronic computers, is processed, evaluated, and developed into air situations at subsector level from which threat evaluation, weapons assignment, and appropriate weapons guidance orders are generated: c. Facilities required to transmit situation data from direction centers to combat centers: d. Combat centers, where situation data from the direction centers, by means of electronic computers, is processed, evaluated and developed into sector-level air situations from which the utilization of weapon resources can be monitored and directed: e. Facilities required to transmit instructions from combat centers to direction centers: f. Facilities required to transmit the output data from the direction center to the input of the appropriate

user's equipment, such as adjacent direction centers, combat centers, data-link-transmitters, CAA and AA facilities.

SAGE SECTOR.

Area of the SAGE defense system.

SAGE SECTOR COMMANDER.

Air Force officer responsible for the air defense of a sector.

SAINT.

Semi automatic analog intercept computer which has the capability of directing an attack at any heading relative to a target.

SAINT ELMO'S FIRE.

Visible, electric discharge, sometimes seen on the mast of a ship, or on any metal point where there is a considerable atmospheric difference of potential due to concentration of the electric field at the points of the conductor.

SAL AMMONIAC CELL.

Cell in which the electrolyte consists primarily of a solution of ammonium chloride.

SALIENT POLE.

Type of field pole which projects toward the armature.

SALIENT-POLE GENERATOR.

Generator having salient poles, particularly when these poles serve as the rotating field in a large turboalternator.

SALISBURY DARKBOX.

Isolating chamber used for test work in connection with radar equipment. The walls of the chamber are specially constructed, in order to absorb all impinging microwave energy at a certain frequency.

SALVAGE.

1. Property that is in such worn, damaged, deteriorated, or incomplete condition, or is of such a specialized nature that it has no reasonable prospect for sale as a unit, or is not usable as a unit without major repairs or alternations. Salvage has some value in excess of its basic material content, because it may contain serviceable components or may have value to a purchaser

who may make major repairs or alterations. Salvage property is composed of condemned, discarded, abandoned, or captured property, including scrap and waste material, nonrepairable property and abandoned private property.

2. Saving or rescuing of condemned, discarded, or abandoned property and of materials contained therein for re-use, refabrication, or scrapping.

SALVAGE GROUP.

Naval task organization designed and equipped to rescue personnel and to salvage equipment and materiel.

SAM. (SOUTH AMERICAN REGION).

South Atlantic territory, defined for administrative reasons.

SAM. (SURFACE-TO-AIR MISSILE).

Missile designed for use against air targets such as alien aircraft or missiles. It is launched from a surface installation, either fixed or mobile.

SAMPLING CIRCUIT.

Circuit, the output of which is a series of discrete values representative of the values of the input at a series of points in time.

SAN ANTONIO AIR MATERIEL AREA.

Air materiel area with headquarters at San Antonio, Texas.

SAN BERNADINO AIR MATERIEL AREA.

Air materiel area with headquarters at San Bernardino, California.

SAND LOAD.

Attenuator used as a terminating section on a transmission line to dissipate power. The space between inner and outer conductors is filled with a sand and carbon mixture which acts as the dissipative element.

SARAC.

Classified definition. (Reference: AFM 100-50.)

SARAN.

Thermoplastic material having good insulating qualities.

SARPS (STANDARDS AND RECOMMENDED PRACTICES).

Standards and recommended practices published by the International Civil Aviation Organization.

SARTACK.

Airborne reconnaissance radar AN/APS-60.

SAT. (SOUTH ATLANTIC REGION).

South Atlantic territory, defined for administrative reasons.

SATELLITE.

Object in space which orbits in the gravisphere of another object.

SATELLOID.

Manned vehicle—half airplane, half satellite, designed to orbit and then return to earth.

SATURABLE REACTOR.

Magnetic core reactor in which a low value of current produces magnetic saturation of the core, thereby reducing the effective inductance and reactance above the saturation point. (Reference: NONLINEAR COIL.)

SATURATE.

Overloading a vacuum tube to the limit of its emission and amplifying capabilities.

SATURATED SIGNAL.

Maximum possible signal that may be observable on a CRT.

SATURATING REACTOR.

Magnetic core reactor operating in the region of saturation without independent control means.

SATURATION.

1. Maximum impregnation of a solid or liquid substance.
2. Maximum possible density of a magnetic field, or the maximum possible vapor pressure of substance in a given space.
3. Condition in electron tubes, under which maximum current is passing through the cathode circuit.

4. Condition which exists in a circuit when an increase in the actuating component produces no further increase in the resultant effect.

5. Chromatic purity or degree of dilution of a color by white; pale shades have low saturation. Color television terminology.

SATURATION CURRENT.

Current produced in the plate circuit of a tube when all of the electrons emitted by the cathode pass to the plate. (Reference: EMISSION CURRENT.)

SATURATION CURVE.

Magnetization curve for a ferromagnetic material.

SATURATION INDUCTION-SYMBOL B.

Maximum intrinsic induction possible in a material.

SATURATION LIMITING.

Limiting the minimum output voltage of a vacuum-tube circuit by operating the tube in the region of plate-current saturation (not to be confused with emission saturation).

SATURATION POINT.

That point beyond which an increase in either the grid voltage, plate voltage, or both, produces no increase in the existing plate current.

SATURATION VALUE.

1. Highest value that can be obtained under given conditions.
2. Value of magnetic flux density beyond which increases in magnetizing force have no appreciable effect on flux density in a particular sample of magnetic material.

SAWTOOTH GENERATOR.

Vacuum-tube oscillator providing an alternating voltage having a sawtooth waveform.

SAWTOOTH VOLTAGE.

Voltage that varies between two values in a manner to provide a waveform pattern resembling the teeth of a saw.

SAWTOOTH WAVE.

Periodic wave which varies in amplitude, substantially linearly with time, between two values;

the interval required for one direction of progress is longer than that for the other.

SAXOPHONE.

Vortex-fed, linear array antenna giving a cosecant-squared radiation pattern.

SB (SINGLE-BRAID).

Used to identify single-strand, braided wire or cable.

SB (SUPPLY BULLETIN).**SB (SWITCHBOARD).**

Manually operated apparatus at an exchange, on which the various circuits from subscribers and other exchanges are terminated, in order to enable operators to establish communication either between two subscribers on the same exchange, or between subscribers on different exchanges. Large panel, or an assembly of panels, on which are mounted switches, circuit breakers, meters, fuses, terminals essential to the operation of electrical equipment. (Reference: EXCHANGE.)

SBA (STANDARD BEAM APPROACH).

British modification of the prewar German Lorenz Low Approach Aid. The ground-based system consists of three beacons: The main beacon, intermarker beacon, and outer marker beacon. The airborne equipment consists of two receivers, one tuned to the marker beacon frequency (38 MC) and the other tuned to any one of six frequencies transmitted by the main beacon (35-40 MC). The main beacon is sited about 300 yards from the stop end of the runway on the extended centerline, and transmits two cardioid patterns overlapping along the runway centerline. The two receivers are alternately keyed with interlocking Morse letters, or with dots and dashes. An equal signal zone is thus formed, and a continuous tone will be heard by the pilot if he is on course. The inner and outer marker beacons are located at the airfield boundary and 3,000 yards from the approach end of the runway, respectively. They are distinctly keyed and modulated to provide the pilot with distance to go to touchdown information. The equipment is subject to course bends, is difficult

to fly (largely due to its aural display which gives data too slowly), and provides no glide path information.

SBAMA (SAN BERDINO AIR MATERIEL AREA).

Air materiel area with headquarters at San Bernardino, California.

SC (SENIOR CONTROLLER).

Officer, in air defense, responsible to the chief controller in the combat center for the proper functioning of the weapons allocation branch.

sc (SINGLE-COTTON COVERED).

Used to identify single strand, cotton covered wire or cable.

SC (SUPERIMPOSED CURRENT).

SCALAR FIELD.

Totality, in a given region of space, of values of some scalar quantity which has a definite value at each point of the region.

SCALAR FUNCTION.

Scalar quantity that has one or more definite values for every value, within assigned limits, of a variable scalar quantity. Thus, the resistance of a given conductor is a scalar function of the temperature of the conductor

SCALAR QUANTITY.

1. Any quantity which has magnitude only.
2. Time, temperature, quantity of electricity.

SCALE OF EIGHT.

Vacuum-tube circuit for counting pulses, in groups of eight, for ion or photon counters.

SCALE-OF-TWO CIRCUIT.

Two-tube circuit that produces one output pulse for each two input pulses. (Reference: SCALING COUPLE.)

SCALING.

1. Electronic method of counting electrical pulses occurring faster than can be handled by mechanical recorders.
2. Use of relationships known as scaling factors to adjust a tube and its operating conditions to meet new frequency handling requirements.

SCALING CIRCUIT.

Electronic circuit used in connection with a mechanical recorder to count pulses at high rates than can be handled by the recorder alone.

SCALING COUPLE.

Two-tube circuit that produces one output pulse for each two input pulses.

SCALING RATIO.

Ratio of the number of pulses entering a scaling circuit to the number of times the mechanical recorder is tripped.

SCAN.

1. To analyze the density of successive elemental areas of the subject copy in a predetermined pattern at the facsimile transmitter, or to record successive elemental areas in a predetermined pattern at the facsimile recorder.
2. To examine point by point, as in converting a scene or image into a methodical sequence of elemental areas.

A- Presentation on a cathode-ray indicator in which time is one coordinate (horizontal) and signals appear as deflections in a direction perpendicular to the time scale (vertical). (Reference: A-INDICATOR.)

CIRCULAR. Type of scan used by most radars. It consists of continuously rotating the antenna about a vertical axis so that the beam sweeps the horizon. The beam may be adjusted so that it sweeps at a constant angle above or below the horizon.

CONICAL. Process of swinging the radar beam about an axis a few degrees off the center of the beam, so that the beam describes a cone in space, the apex of which is located at the antenna.

HELICAL. Complex scan composed of circular and sector scans. The beam is rotated about a vertical axis and, simultaneously, a slow, vertical, sector scan is performed. Any point on the beam will describe a helix in space.

LOBE SWITCHING. Similar to conical scan,

except that the beam is switched rapidly back and forth between two positions located a few degrees apart.

PALMER. Combination of circular or raster and conical scans. The beam is swung around the horizon and, at the same time, a conical scan is performed.

RASTER. Very similar to electron beam scanning in an ordinary television set. A horizontal sector scan that changes in elevation.

SECTOR. Similar to circular scan, except that the beam oscillates back and forth through an angle (usually less than 180 degrees).

SPIRAL. Modification of conical scan. The beam is made to move in a cone whose apex angle is slowly varied. A point on a beam describes a distorted spiral in space.

SCAN CONVERTER.

Unit for converting electronic scan data to synchro bearing data.

SCANNER.

1. That part of the facsimile transmitter which converts the densities of the elemental areas of the subject copy into facsimile signal. This device usually includes a light source, an optical system, a light-sensitive device arranged to see only one elemental area at a time, and a method of moving the elemental area to scan the copy.
2. Moving parts of the antenna which cause the beam to scan.
3. That part of the facsimile transmitter which systematically translates the densities of the elemental areas of the subject copy into signal-wave form.

SCANNER AMPLIFIER.

Vacuum-tube amplifier used to amplify the output signal voltage of the scanner in a facsimile transmitter.

SCANNING.

1. In television, facsimile, or picture transmission, scanning is the process of analyzing or synthesizing, according to a predetermined method, the light values or equivalent characteristics of elements constituting a picture area.

2. In radar, scanning is the process of directing a beam of radio-frequency energy successively over the elements of a given region, or the corresponding process in reception.

CONICAL. Scanning in which the direction of maximum response generates a cone whose vertex angle is of the order of the beam width.

HELICAL. Scanning in which a point of the RF beam describes a distorted helix. The antenna rotates continuously about the vertical axis while the elevation angle changes slowly from zero to 90°.

INTERLACED. In television, a scanning process in which the distance from center to center of successively scanned lines is two or more times the nominal line width, and in which the adjacent lines belong to successive fields.

LINEAR. Scanning in which a radar beam generates only one arc or circle.

PROGRESSIVE. In television, a rectilinear scanning process in which the distance from center to center of successively scanned lines is equal to the nominal line width.

RECTANGULAR. Two-dimensional sector scanning in which a slow sector scanning in one direction is superimposed on a rapid sector scanning in a perpendicular direction.

RECTILINEAR. In television, the process of scanning an area in a predetermined sequence of narrow, straight, parallel strips.

SECTOR. Modification of circular scanning in which only a portion of the plane or flat cone is generated.

SPIRAL. Scanning in which the direction of maximum response describes a portion of a spiral.

SCANNING CIRCUIT.

1. Circuit which produces at regular intervals a linear, circular, or other form of movement of the beam of the cathode-ray tube.

2. That part of a cathode-ray oscilloscope which provides a time-reference base. (Reference: SWEEP CIRCUIT.)

SCANNING HEAD.

Light source and phototube combined as a single unit for scanning a moving strip of paper, cloth, or metal in photoelectric side-register control systems.

SCANNING LINE.

1. In television, a single, continuous, narrow strip which is determined by the process of scanning.
2. Path traced by the scanning or recording spot in one sweep across the subject copy or record sheet.

SCANNING-LINE FREQUENCY.

Number of scanning lines per second.

SCANNING LINEARITY.

In television, the uniformity of scanning speed during the trace interval.

SCANNING LOSS.

In a radar system employing a scanning antenna, the reduction in sensitivity (usually expressed in decibels) due to scanning across a target, compared with that obtained when the beam is directed constantly at the target.

SCANNING SPEED.

Number of inches per second scanned by the facsimile transmitter or facsimile recorder.

SCANNING SPOT.

1. In television, the scanning spot is the area which is being explored at any instant in the scanning process.
2. That portion of the subject copy which is seen by the scanner at any instant. (Reference: ELEMENTAL AREA.)

SCANNING YOKE.

Specially shaped, iron core that supports the electromagnetic deflecting coils which surround the neck of some types of cathode-ray tubes to provide controlled deflection of the electron beam.

SCAP. (SUPREME COMMANDER, ALLIED POWERS).

Commander superior to all other allied commanders.

SCARWAF (SPECIAL CATEGORY OF ARMY PERSONNEL WITH THE AIR FORCE).

Army personnel and units in the SCARWAF category are assigned with the Air Force for the performance of Air Force functions only. They are charged to Air Force strength.

SCATER (SECURITY CONTROL OF AIR TRAFFIC).

Plan, for use after declaration of an air defense emergency, to land or divert all nontactical military or civilian aircraft currently airborne.

SCATTER.

1. When radio waves encounter matter, a disordered change in the direction of propagation.
2. Spurious radar echoes due to reflections from layers of the ionosphere.

Note. The specific term forward scatter refers to the scattering of radio waves by the atmosphere beyond the radio horizon into the theoretical shadow zone below the normal path of propagation.

SCATTER-BAND.

Band of frequencies within which the principal operating frequency of any given transmitter tube is permitted to vary.

SCATTERED REFLECTIONS.

Reflections from portions of the ionosphere having different virtual heights, which mutually interfere and cause rapid fading.

SCATTERED ROENTGEN RAYS.

Roentgen rays (X-rays) that, during their passage through a substance, have deviated in direction and may also have increased in wave length.

SCATTERING.

Production of waves of changed direction, frequency, or polarization when waves encounter matter.

Note. The term is frequently used to imply a disordered change in the incident energy.

SCATTERING CROSS SECTION OF A TARGET.

Ratio of the power reflected from, to the power incident on, a given target. It depends on size, configuration, aspect, and composition of the target, and the wavelength and polarization of the RF energy.

scds (SINGLE-COTTON, DOUBLE-SILK COVERED).

Used to identify single-strand, cotton-wrapped, double-layer, silk-covered wire or cable.

SCEAN OF AIR-SEA RESCUE FREQUENCY.

Simplex channel for intercommunication between aircraft and surface vessels (including submarines) engaged in, and at the scene of, an air-sea rescue operation.

SCHEMATIC CIRCUIT DIAGRAM.

Circuit diagram in which component parts are represented by simple, easily drawn symbols.

SCHEMATIC DIAGRAM.

Diagram of the general scheme of an electrical circuit, with graphical symbols representing components.

SCHEMATIC, CABLE AND TRUNK.

Drawing which shows in block form the interconnections between all major circuits in an office.

SCHEMATIC, POWER.

Drawing which shows all elements of the power charge and discharge circuits, and the interconnections thereto.

SCHEMATIC, RINGING.

Drawing which shows all elements of the office ringing equipment, and the interconnections between these elements.

SCHEME OF MANEUVER.

Tactical plan to be executed by a force in order to seize assigned objectives.

SCHEME, COMMUNICATIONS-ELECTRONICS.

Document which translates an approved operational requirement into the engineering data and supply information necessary to place a communications-electronics facility in an operational condition.

SCHERING BRIDGE.

AC form of Wheatstone bridge.

SCHROEDINGER EQUATION.

Wave equation set up by Schroedinger to represent the de Broglie wave. It gives the relation between the wave function, the particles mass, the total energy, the potential energy, and Planck's constant.

SCHUMANN REGION.

Range of very short, ultra-violet wave-lengths, extending down to about 1,200 Angstrom units.

SCHWARZCHILE ANTENNA.

Rapid-scanning antenna.

SCIENTIFIC ADVISORY BOARD.

Board that advises the Chief of Staff, USAF, upon scientific matters.

SCINTILLATION.

Random fluctuation in radio propagation, of the received field about its mean value, the deviations usually being relatively small. This use of the term scintillation is an extension of the astronomical term for the twinkling of stars, and the underlying explanation may be similar. A minute flash of light, observed when an alpha particle strikes a suitable luminescent screen in the dark.

SCNAWAF (SPECIAL CATEGORY NAVY WITH AIR FORCE).

Navy personnel and units in the SCANWAF category are assigned to the Air Force for the performance of Air Force functions only. They are charged to Air Force strength.

SCO (SCOUT, SCOUTING).

1. Scout: Aircraft used to reconnoiter an airspace or area to probe its air defenses; also, aircraft used in search and rescue operations.
2. Scouting: Action of searching from an aircraft.

SCO (STATISTICAL CONTROL OFFICE, OFFICER).**SCOPE.**

Contraction of oscilloscope. (For use in radar sets, cathode-ray oscilloscopes are arranged to present displays showing desired information.)

SCOPHONY TELEVISION SYSTEM.

Mechanical television system developed in England, utilizing the light-storage phenomenon of a supersonic light valve and ingenious optical and mechanical methods that provide large, bright images suitable for theater installation as well as for home television receivers. The apparent screen brightness is multiplied several hundred times, because several hundred picture elements are projected simultaneously.

SCOTT CONNECTION.

Method of connecting transformers to convert two phase power to three phase power, or vice versa.

SCOUT, SCOUTING.

1. Scout: Aircraft used to reconnoiter an airspace or area to probe its air defenses; also, aircraft used in search and rescue operations.
2. Scouting: Action of searching from an aircraft.

SCP (SECTOR COMMAND POST).

Physical facility, in air defense, from which a sector commander and his battle staff supervise air defense.

SCRAMBLE.

Transpose and/or invert bands of frequencies, or otherwise modify the form of the intelligence at the transmitting end, according to a prearranged scheme, to obtain secrecy.

2. To make telephony unintelligible to casual interception.
3. Mix, in cryptography, in random or quasi-random fashion.
4. Order for interceptors to become airborne as quickly as possible for an air defense mission.

SCRAMBLED.

Track status indicating that interceptors have been scrambled, but have not yet been reported as airborne.

SCRAMBLED SPEECH.

Speech that has been made unintelligible by inverting the frequencies in such a manner as to

change the sound completely for secret transmission, yet permit converting it back at the receiving end. (Reference: INVERTED SPEECH.)

SCRAMBLER CIRCUIT.

Circuit that divides essential speech frequencies into several ranges by means of filters, and displaces the frequencies in each range a given amount, so that the resulting reproduced sounds are unintelligible when the signal is picked up by an ordinary radio receiver. Used to obtain secrecy in radiotelephony.

SCRAMBLING CIRCUIT.

Tactical voice circuit which is established between the controller and the fighter readiness room for the purpose of ordering fighter aircraft off the ground for interception missions.

SCREEN.

1. Metal partition or shield which isolates a device from external magnetic or electric fields.
2. Screen-grid electrode of an electron tube.
3. Chemically coated inside surface of the large end of a cathode-ray tube which becomes luminous when struck by an electron beam. (Reference: FLUORESCENT SCREEN, LONG-PERSISTENCE SCREEN.)

SCREEN DISSIPATION.

Power dissipated in the form of heat on the screen grid as the result of bombardment by the electron stream.

SCREENING GROUP.

Defensive unit of naval vessels employed to protect the attack force in amphibious operations. It includes antisubmarine vessels and picket boats located seaward from the transport and fire support areas.

SCREEN GRID.

Electrode between the control grid and the plate of an electron tube, which is maintained at ground potential with respect to the signal, so as to shield the grid from the plate.

SCREEN LUMINOUS-PERSISTENCE CHARACTERISTIC.

Relation, usually shown by a graph, between the

brilliancy of the spot and the time elapsed after cessation of excitation.

SCREEN SPECTRAL CHARACTERISTIC.

Relation, usually shown by the wavelength of the radiation.

SCREEN-GRID MODULATION.

Modulation accomplished by introducing an audio voltage on the screen grid of the modulated tube.

SCREEN-GRID TUBE.

Tube with a grid between the control grid and the anode, which prevents the latter from reacting on the former. (Reference: TETRODE.)

SCREEN-GRID VOLTAGE.

Direct-voltage value applied between the screen grid and the cathode of a vacuum tube.

SCREENING.

Dispensing of chaff dipoles, usually sufficient in quantity to return an echo as large as the dispensing aircraft, over a large volume in order to conceal the path of the following aircraft.

SCREENING ANGLE.

Vertical angle bounded by a straight line from the radar antenna to the horizon, and the horizontal at the antenna (assuming a $4/3$ earth).

SCREENING ANGLE PENETRATION.

Penetration of the antenna radiation pattern by a target which approaches from below the screening angle, and inside the db contour for the aircraft.

SCREW-IN ANCHOR.

Spiral or screw-shaped anchor.

scs. (SINGLE-COTTON, SINGLE-SILK COVERED WIRE).**SD (SECRETARY OF DEFENSE).**

Civilian head of the Department of Defense and the second ranking member of the President's cabinet; the title of this officer.

SD (SENIOR DIRECTOR).

Officer, in air defense, responsible for overall operation of the direction center.

SDC (SAGE).

(Reference SEMI-AUTOMATIC GROUND ENVIRONMENT.)

SDT (SENIOR DIRECTOR TECHNICIAN).

Noncommissioned officer who assists the senior director in the SAGE system.

SDTP (STARTOVER DATA TRANSFER AND PROCESSING PROGRAM).

Program which controls the transfer of start-over data from the active to the standby machine, and their subsequent processing by the standby machine.

SDV (SLOWED-DOWN VIDEO).

Technique or method of transmitting radar data over narrow bandwidth circuits. The procedure involves storing of the radar video over the time required for the antenna to move through one beamwidth, and the subsequent sampling of this stored video at some periodic rate at which all of the range intervals of interest are sampled at least once each beamwidth or per azimuth quantum. The radar returns are quantized by use of AN/FST-L equipment at a gap-filler radar site.

SEA. (SOUTHEAST ASIA).

International Civil Aviation Organization designation for Southeast Asia region.

SEA RETURNS.

Echoes received from the surface of the sea by an airborne radar set.

SEA WATER.

Sea water has a conductivity of five and a dielectric constant of 80 in MKS units.

SEADROME LIGHT.

Light mounted on a doughnut-shaped rubber buoy and used to outline a landing lane on water at night for seaplanes.

SEAL.

1. Gas or watertight dielectric insertion or covering, in waveguide technique, designed to present no obstruction to RF energy.

2. Any method of preventing leakage, such as the packing around a crankshaft, when it extends outside the crankcase.

SEALED END OF A CABLE.

End of a cable fitted with a cap for protection against the loss of compound or the entrance of moisture.

SEALING COMPOUND.

Wax used in dry batteries, capacitor blocks, transformers, etc., to keep out air and moisture.

SEALING OFF.

Final closing of the bulb of a vacuum tube or lamp after evacuation.

SEAM WELDING.

Welding process in which two pieces of metal are overlapped and passed between welding electrodes that are in the form of wheels.

SEARCH.

Term applied to that phase of radar operation when the lobe, or beam of radiated energy, is directed in order to cover a large area. This may be accomplished by a broadbeam antenna or a rotating or scanning antenna.

SEARCH AND RESCUE.

Use of aircraft, surface craft, submarines, and other special equipment employed for the rescue of personnel in distress on land or at sea.

SEARCH AND RESCUE COORDINATION CENTER.

Installation with personnel, communication, and other facilities required to initiate, coordinate, and terminate search and rescue within a specified area.

SEARCH COIL.

Exploring coil of wire used with a ballistic galvanometer or fluxmeter to measure flux density in a magnetic field.

SEARCH RADAR.

Radar, whose primary function is detection, with moderately accurate range, bearing, elevation, and target composition data.

SEARCH RECEIVER.

Special calibrated receiver which can be tuned over a wide frequency range in order to detect and measure RF signals transmitted by the enemy. (Reference: INTERCEPT RECEIVER.)

SEARCHING GATE.

Gate pulse which is made to search back and forth over a certain range.

SEARCHLIGHT CONTROL RADAR.

Equipment for directing searchlights onto aircraft.

SEARCHLIGHTING.

Projecting a beam of radio-frequency energy, continuously at an object, as contrasted to scanning.

SEASONAL FACTOR.

Factors which are used to adjust sky-wave absorption data for seasonal variations. These variations are due primarily to seasonal fluctuations in the heights of the ionospheric layers.

SEASONING.

Overcoming a temporary unsteadiness of the magnetron which may appear when it is first installed.

SEC (SECRETARY).

1. Name applied to certain officers of the U S government responsible for an executive or military department. The abbreviation, sec, is used in combinations only, as in SecNav, Secretary of the Navy.

2. Capitalized title of such an officer.

3. Name sometimes given a particular staff officer responsible to the commander for certain official correspondence, records, etc.

SECO (SEQUENTIAL CONTROL).

Procedures for permitting central control operator in connection with a teletype communications network, to request and receive communications sequentially from each station in the network. The messages for each station are stored in the teleprinter until requested by the central control station. The central control point utilizes an assigned code letter combination for each network station. When a station receives its assigned call, the message is transmitted. The entire system can then operate effectively, without requiring each station to be warned continuously. Sequential control is especially valuable in handling routine traffic of uniform volume, such as the collection of weather reports.

SECOND DETECTOR.

That portion of a superheterodyne receiver that separates the audio component from the modulated intermediate frequency. (Reference: DETECTOR.)

SECOND STAGE.

Next rocket to fire after the end of the power phase of the first or base rocket.

SECOND-TRIP ECHOES.

Echoes returned from targets so distant that the time required for the radar pulse to go out to the target and return to the set is longer than the interval between pulses.

SECOND-CHANNEL INTERFERENCE.

Interference caused in one radio circuit by a transmitter which is assigned for operation in the next channel beyond an adjacent channel..

SECONDARY.

1. Output coil in a transformer in which the flow of current is due to inductive coupling with another coil.
2. Low-voltage conductors of a power distributing system. (Reference: PRIMARY.)

SECONDARY BATTERY.

Connected group of two or more storage cells. Common usage permits application of this term to a single cell used independently. (Reference: STORAGE BATTERY.)

SECONDARY CELL.

Electrolytic cell for the generation of electric energy in which the cell, after being discharged, may be restored to a charged condition by an electric current sent through the cell in a direction opposite that of the discharging current. (Reference: STORAGE CELL.)

SECONDARY ELECTRON.

1. Electron produced in the detector by any process other than the ionizing event.
2. One emitted as a result of bombardment of a material by electrons or cathode rays.
3. That electron that has the lesser energy after a collision between two electrons.

SECONDARY-ELECTRON MULTIPLIER.

Electron tube in which the electron stream is focused in turn onto a succession of targets, each of which adds its secondary electrons to the stream thus providing considerable amplifying effect.

SECONDARY EMISSION.

Liberation of electrons from an element within a vacuum tube other than the cathode, due to impact of electrons traveling from the cathode to some other element at a higher potential.

SECONDARY FAULT.

Insulation breakdown occurring as a result of a primary fault.

SECONDARY FREQUENCY.

Frequency assigned for use on a particular radio circuit when primary frequency becomes unusable for any reason.

SECONDARY INDICATION.

Repeater unit which duplicates, at a remote station, the indications of the master indicator of the gyro flux gate compass system.

SECONDARY RADAR.

Radar in which the distant object cooperates by reinforcing, repeating, or otherwise modifying the echo.

SECONDARY RADAR.

Radar using automatic retransmission on the same or different radio frequency.

SECONDARY RADIATION.

Reradiation of electromagnetic waves in a random manner.

SECONDARY ROENTGEN RAYS.

Roentgen rays (X-rays emitted by any matter that has been irradiated with X-rays.

SECONDARY SERVICE AREA.

Area served by the sky wave of a broadcast station and not subject to objectionable interference. The signal is subject to intermittent variations in intensity.

SECONDARY STANDARD.

1. Unit, as of length, capacitance, or weight,

used as a standard of comparison in individual countries or localities, but checked against the one primary standard in existence somewhere.

2. Unit defined as a specified multiple or submultiple of a primary standard, such as the centimeter.

SECONDARY STATION.

Any standard broadcast station, except a class I station, operating on a clear channel.

SECONDARY VOLTAGE.

Voltage across the secondary winding of a transformer.

SECONDARY WINDING.

Winding on the output side of a transformer.

SECONDARY X-RAYS.

X-rays given off by an object irradiated with X-rays. The frequency of the secondary rays is characteristic of the material in the object.

SECRETARY.

1. Name applied to certain officers of U.S. government responsible for an executive or military department. The abbreviation, Sec, is used in combinations only, as in Sec Nav—Secretary of the Navy.

2. Captitized: title of such an officer.

3. Name sometimes given a particular staff officer responsible to the commander for certain official correspondence, records, etc.

SECRETARY OF DEFENSE.

Civilian head of the Department of Defense and the second ranking member of the President's cabinet; the title of this officer.

SECRETARY OF THE AIR FORCE.

Civilian head of the Department of the Air Force.

SECRETARY OF THE ARMY.

Civilian head of the Department of the Army.

SECT (SECTION, SECTIONAL, SECTOR).

1. Section: distinct part of a unit as applied to a subdivision or branch in certain headquarters,

organizations, or a part of a formation or distinct group of aircraft; SAGE subdivision of a combat center or direction center branch.

2. Sectional: that which has, or can be divided into, equal parts.

3. Sector: defense area designated by boundaries within which a unit operates and for which it is responsible; one of the subdivisions of a coastal frontier.

SECTION.

(Reference: (SECTION, SECTIONAL, SECTOR.)

SECTION OF A POLE LINE.

That part of the line, more than one span in length, which is included between any two designated points in the line.

SECTIONAL.

That which has or can be divided into distinct parts.

SECTIONAL VERTICAL ANTENNA.

Vertical antenna in which the continuity is broken at one or more points by the insertion of reactances or driving voltages.

SECTOR.

1. Defense area designated by boundaries within which a unit operates and for which it is responsible.

2. One of the subdivisions of a coastal frontier.

SECTOR CABLE.

Multi conductor cable in which the cross section of each conductor is substantially a sector, an ellipse, or an intermediate figure.

SECTOR COMMAND POST.

Physical facility, in air defense, from which a sector commander and his battle staff supervise air defense.

SECTOR SCAN.

Similar to circular scan, except that the beam oscillates back and forth through an angle (usually less than 180 degrees).

SECTOR SCANNING.

Modification of circular scanning in which only a portion of the plane or flat cone is generated.

SECTORAL HORN.

Horn with two sides which are parallel and two sides which diverge.

SECULAR VARIATION.

Slow variation in the strength of the magnetic field of the earth, requiring many years for a complete cycle.

SECURITY.

1. Measures taken by a command to protect itself from espionage, observation, sabotage, annoyance, or surprise.
2. Condition which results from the establishment and maintenance of protective measures which insure a state of inviolability from hostile acts or influences.
3. With respect to classified matter, it is the protected condition which prevents unauthorized persons from obtaining information of direct or indirect military value.

SECURITY CONTROL OF AIR TRAFFIC.

Plan, for use after declaration of an air defense emergency, to land or divert all nontactical military or civilian aircraft currently airborne.

SEEBECK EFFECT.

Development of a voltage, due to differences in temperature between the junction of two dissimilar metals and some other part of the same circuit. (Reference: THERMOELECTRIC EFFECT.)

SEGREGATION.

Act of utilizing, in tape relay, only that portion of the tape heading of any one transmission which is of value to that transmission. The methods employed may include switching arrangement, tape severing, etc.

SEISMIC MICROPHONE.

Special type of microphone placed in contact with

the ground to detect sounds coming through the ground.

SEISMOGRAPH.

Instrument for recording the time, direction, and intensity of earthquakes or earth shocks produced by explosions during geophysical prospecting.

SEIZING WIRE.

Soft-drawn, copper wire used to improve field wire splices mechanically and electrically.

SEIZURE.

Term used in automatic (dial) telephony to indicate the establishment of an electrical connection through the operation of the first switch.

SELCAL (SELECTIVE CALLING).

Techniques or procedures, applied to radio communications, for calling only one of several receiving stations guarding the same frequency. The transmitted signal is modulated according to predetermined codes, so that a visual or aural indication will appear only in the receiver being called. One application of SELCAL techniques would be in air-ground communications where the pilot is required to guard several frequencies. With this system, he would not have to listen to any transmissions except those specifically intended for him.

SELECTANCE.

Measure of the falling off in the response of a resonant device with departure from resonance; expressed as the ratio of the amplitude of response at the resonant frequency to the response at some frequency differing from it by a specified amount.

SELECTION CHECK.

(Reference: CHECK, SELECTION.)

SELECTIVE.

Possessing the ability to respond to a desired frequency in greater degree than to other frequencies.

SELECTIVE ABSORPTION.

Absorption of rays having only a certain group of frequencies.

SELECTIVE CALLING.

Techniques or procedures, applied to radio communications, for calling only one of several receiving stations guarding the same frequency. The transmitted signal is modulated according to predetermined codes, so that a visual or aural indication will appear only in the receiver being called. One application of SELCAL techniques would be in air-ground communications where the pilot is required to guard several frequencies. With this system, he would not have to listen to any transmissions except those specifically intended for him.

SELECTIVE FADING.

1. Fading of the sky wave in which the carrier and various sideband frequencies fade at different rates, causing audio-frequency distortion.
2. Fading which affects the different frequencies within a specified band unequally.
3. Fading in which the variation in the received signal strength is not the same for all frequencies in the frequency band of the received signal. Selective fading usually occurs on radio circuits under multiplath transmission conditions.

SELECTIVE INTERFERENCE.

Interference whose energy is concentrated in narrow frequency bands.

SELECTIVE RADIATION.

Radiation of rays having only a limited range of frequencies.

SELECTIVE RECEIVER.

Radio receiver that responds only to the desired frequency.

SELECTIVE RINGING.

Telephone arrangement in which only the bell of the called subscriber rings, with other bells on the party line remaining silent.

SELECTIVITY.

1. That characteristic which determines the extent to which it is possible to differentiate between the desired signal and disturbances of other frequencies.

2. Ability of a receiver to reject transmissions other than the one to which it is tuned (usually expressed by a curve in which the input signal voltage required to produce a constant power output is plotted against frequency).

3. Degree to which a radio receiver can accept the signals of one station while rejecting those of all other stations on adjacent channels.

SELECTIVITY CONTROL.

Control that adjusts the selectivity of a radio receiver.

SELECTOR.

1. Name given to the switch or relay group switching system that selects the path which the call is to take through the system. Operates under the control of the calling station's dial.
2. Sequential switch usually multicontact and motor driven. A distributor.
3. Switch, in automatic (dial) telephony, which, in response to dial pulses, hunts for and chooses an idle circuit to extend a call.

DIGIT ABSORBING. Dial switch arranged to step up and then fall back on the first one of two digits dialed. It then operates on the next digit dialed.

INCOMING. Selector associated with trunk circuits from another central office.

INCOMING FIRST. Connects incoming calls from outlying dial offices to local second selectors.

LOCAL FIRST. Second portion of a line connecting to a calling line, through a line primary switch, to a local second selector and special service second selector and returning dial tone to the calling subscribers.

LOCAL SECOND. Interconnects a local first selector to a connector switch which is controlled and directed by a hundreds digit received from the local first selector.

RELAYS. Relay circuit associated with a selector, consisting of a magnetic impulse counter, for registering digits and holding a circuit.

SECOND. Selector working off a second level on a first selector and providing channels to a reverting busy call circuit and to connectors for a 2000 group.

SPECIAL SERVICE SOUND. Connects level one of a local incoming selector to inspector's ring back, wire chief, fire, dial speed indicator, and other special service lines as required.

SELECTOR DISTRIBUTING TERMINAL ASSEMBLY. Terminating facilities for the selector bank wiring between each pair of selector bays. Positioned between and in line with the two selector bays, the bank wiring of which it terminates.

SELECTOR PERMANENT.

Permanent condition in a selector caused by a short circuit in the calling line loop or by failure of the calling telephone user to operate the dial immediately after hearing dial tone.

SELECTOR SWITCH.

Telephone switchboard, remotely controlled switch for selecting a group of trunk lines fixed by part of the call number and connecting to an idle trunk in that group.

SELENIUM.

Chemical element having marked photosensitive properties and a resistance that varies inversely with illumination.

SELENIUM CELL.

Photoconductive cell consisting of a small amount of selenium between suitable electrodes.

SELENIUM RECTIFIER.

Rectifier formed of discs of iron in contact with a layer of metallic selenium.

SELF-BIAS.

1. Voltage developed as a result of the flow of vacuum-tube current through a resistor in a grid or cathode lead.

2. Biasing a tube by utilizing the voltage drop developed across a resistor through which either its plate or grid current flows.

SELF-CAPACITANCE.

Distributed capacitance of a circuit or coil containing closely spaced, insulated wire, due to the

capacitor effects between adjacent conductors.

SELF-CHECKING CODE.

(Reference: CHECK, FORBIDDEN-COMBINATION.)

SELF-CLEANING CONTACTS.

Contacts so designed that they close with a rubbing motion which keeps them clean.

SELF-EXCITATION.

Supplying field current to a generator from its own armature.

SELF-EXCITED OSCILLATOR.

Oscillator depending on its resonant circuits for frequency determination. (Reference: CRYSTAL OSCILLATOR.)

SELF-HEALING CAPACITOR.

Capacitor that repairs itself after breakdown caused by excessive voltage.

SELF-IMPEDANCE.

Ratio of an applied potential difference to the resultant current at these terminals, all other terminals being open.

SELF-INDUCTANCE.

Property of an electrical circuit which determines, for a given rate of change of current in the circuit, the electromotive force induced in the same circuit.

SELF-INDUCTION.

1. Action in which a counter electromotive force is produced in a conductor when the conductor's own magnetic field collapses and expands with a change in current flow.

2. Production of a voltage in a circuit by a varying current in that same circuit.

SELF-LOCKING NUT.

Nuts which have an inherent locking action; they are not readily loosened by vibration.

SELF-PULSING.

Special type of grid pulsing which automatically stops and starts the oscillations at the pulsing rate by a special circuit.

SELF-QUENCHED DETECTOR.

Superregenerative detector in which the time constant of the grid leak and grid capacitor is sufficiently large to cause intermittent oscillation above audio frequencies, serving to stop normal regeneration each time just before it spills over into a squealing condition.

SELF-QUENCHING COUNTER TUBE.

Counter in which the discharge ceases because of an internal mechanism in the tube.

SELF-QUENCHING OSCILLATOR.

Intermittent self-oscillator producing a series of short trains of RF oscillations separated by intervals of quiescence. The quiescence is caused by rectified oscillatory currents building up in some part of the circuit to cut off the oscillations for a given period.

SELF-RESET.

Automatically returning to the original position when normal conditions are resumed. Applied chiefly to relays and circuit breakers.

SELF-SCREENING RANGE.

Range at which a target can be detected by a radar in the midst of its jamming mask, with a certain specified probability.

SELF-STARTING SYNCHRONOUS MOTOR.

Synchronous motor provided with the equivalent of a squirrel-cage winding, so that it can be started as an induction motor.

SELF-VENTILATED MACHINE.

Machine which has its ventilating air circulated by means integral with the machine.

SELF-WIPING CONTACTS.

Contacts that close with a sliding motion which automatically wipes off dirt.

SELSYN.

Single-phase, self-synchronous machine which converts mechanical position into electrical signal, or vice versa.

SELSYN GENERATOR.

Transmitter of a synchro unit. It is a larger and higher wattage unit than the indicator, and its

rotor is geared to, or otherwise linked with, some sort of mechanical equipment.

SELSYN MOTOR.

Synchromotor having a rotor that will always assume exactly the same position as the rotor of a synchrogenerator to which it is electrically connected, even though the two units are some distance apart. The rotors, thus, will always run at equal speeds and reverse at the same instant. Used chiefly for obtaining a remote indication of position or for remote control.

SELSYN RECEIVER.

Term sometimes used to denote a selsyn motor.

SELSYN SYSTEM.

Name for a system obtaining remote indication or control by means of self-synchronizing motors. (Reference: SYNCHRO SYSTEM.)

SEMI-AUTOMATIC GROUND ENVIRONMENT.

Portion of air defense that provides the means for the semi-automatic processing of data and weapon control. This system was formerly referred to as the LINCOLN transition system. It consists of the following: a. Facilities required to process and transmit air surveillance data from existing and planned data-gathering sources to direction centers. b. Direction centers where air surveillance data, by means of electronic computers, is processed, evaluated, and developed into air situations at subsector level from which threat evaluation, weapons assignment, and appropriate weapons guidance orders are generated. c. Facilities required to transmit situation data from direction centers to combat centers. d. Combat centers, where situation data from the direction centers, by means of electronic computers, is processed, evaluated and developed into sector-level air situations from which the utilization of weapons resources can be monitored and directed. f. Facilities required to transmit the output data from the direction center to the input of the appropriate user's equipment, such as adjacent direction centers, combat centers, data-link-transmitters, CAA and AA facilities.

SEMI-DUPLEX.

Method of operation of a communication circuit where one end is duplex and one end simplex operation. Sometimes used in mobile systems with the base station duplex and the mobile station simplex. Requires two frequencies.

SEMAUTOMATIC SUBSTATION.

Power substation in which the sequence of a starting operation is automatic, but is put into action by remote control from some other point.

SEMAUTOMATIC TAPE RELAY.

Method of communication whereby messages are received and retransmitted in teletypewriter tape form involving manual intervention in transfer of the tape from receiving reperforator to automatic transmitter.

SEMAUTOMATIC TELEPHONE SYSTEM.

Telephone system in which operators receive orders verbally from the calling parties and establish connections by means of automatic apparatus.

SEMICONDUCTOR.

Mineral crystals having an electrical conductivity lying between that of metals and insulators. (Reference: TRANSISTOR.)

SEMIMAGNETIC CONTROLLER.

Electrical controller having only part of its basic functions performed by electromagnets.

SEMIPROTECTED MACHINE.

Machine in which part of the ventilating openings in the frame, usually in the top half, are protected; the others are left open.

SEMISELECTIVE RINGING.

Party line ringing wherein the bells of two stations are rung simultaneously, differentiation being by number of rings.

SEISTRAIN INSULATOR OR SEMITENSION ASSEMBLY.

Two insulator strings at right angles, each making an angle of about 45° with the line conductor. These assemblies are used at intermediate points where it may be desirable to partially anchor the conductor to prevent great movement in case of a broken wire.

SEN (SENIOR).

1. Considered older, better skilled, or more experienced in some regard, as in years in service or time served in a particular grade.
2. Designating a person or his position with greater responsibility than another with similar duties.

SENDER.

Part of an automatic-switching telephone system which receives pulses from a dial or other source and, in accordance with them, controls the further operations necessary in establishing a telephone connection.

SENDING FILTER.

Filter employed at a transmitting terminal.

SENDING-END IMPEDANCE.

Ratio of an applied potential difference to the resultant current at the point where the potential difference is applied. The sending-end impedance of a line is synonymous with the driving-point impedance of the line.

Note: For an infinite uniform line, the sending-end impedance and the characteristic impedance are the same; and for an infinite periodic line, the sending-end impedance and the iterative impedance are the same.

SENIOR.

1. Considered older, better skilled, or more experienced in some regard, as in years in service or time served in a particular grade.
2. Designating a person or his position with greater responsibility than another with similar duties.

SENIOR CONTROLLER.

Officer in a combat center responsible to the chief controller for the proper functioning of a weapons allocation branch.

SENIOR DIRECTION.

Officer who is responsible for the operation of an air defense direction center, and for the conduct of air defense within a subsector.

SENIOR DIRECTION TECHNICIAN.

Noncommissioned officer who assists the senior director in a SAGE system.

SENIOR WEAPONS DIRECTOR.

Officer in the direction center weapons branch responsible to the senior director for committing weapons against targets and for overall supervision of SAGE intercept functions.

SENIOR WEAPONS DIRECTOR TECHNICIAN.

Noncommissioned officer in a SAGE system who assists the senior weapons director.

SENSATION LEVEL.

Difference between the intensity level of sound and the intensity level of the threshold of audibility for that sound. It is expressed in decibels.

SENSE FINDER.

Portion of a direction finder which permits determination of direction without 180° ambiguity.

SENSING.

1. Relative direction of motion of a deviation indicator needle resulting from departure of an aircraft from the desired flight path.
2. Process of resolving a 180° ambiguity.

SENSITIVE RELAY.

Relay requiring only small currents for its operation. Used extensively in photoelectric circuits.

SENSITIVITY.

1. Sensitivity of a radio receiver or similar device is taken as the minimum input signal required to produce a specified output signal having a specified signal-to-noise ratio. This signal input may be expressed as power or as voltage, with input network impedance stipulated.
2. Least signal input capable of causing an output signal having desired characteristics.

SENSITIVITY CONTROL.

Control that adjusts the amplification of radio-frequency amplifier stages in a radio receiver.

SENSITIVITY-TIME CONTROL.

Radar circuit which reduces receiver sensitivity for the first few thousand yards of each sweep, then gradually restores it to normal. Helpful in reducing the effect of sea return and side lobes.

SENSOR.

Portion of a navigational system which receives

deviations from a reference and converts these deviations into signals.

SEPARATE EXCITATION.

Providing field current for a generator from an independent source, or for a motor from a source different from that connected across the armature.

SEPARATION FILTER.

Combination of filters used to separate one band of frequencies from another. Often used to separate carrier and voice frequencies for transmission over individual paths.

SEPARATION OF URANIUM ISOTOPES.

Taking advantage of the slight difference in the physical properties of the uranium isotopes.

SEPARATOR.

Insulating sheet or other device employed in a storage battery to prevent metallic contact between plates of opposite polarity within a cell.

SEPE (SEATTLE PORT OF EMBARKATION).

Troop and supply embarkation point located at Seattle, Washington.

SEPTATE COAXIAL CAVITY.

Coaxial cavity having a vane or septum, added between the inner and outer conductors, so that it acts as a cavity of rectangular cross section bent transversely.

SEPTATE MODE.

Waveguide mode which can be propagated along a septate waveguide.

SEPTATE WAVEGUIDE.

Coaxial transmission line in which a septum extends radially from inner to outer electrodes.

SEPTUM.

Thin, metal vane which is perforated with an appropriate wave pattern. It is inserted in a waveguide for wave reflecting or other purposes.

SEQUENTIAL.

Color television system in which the three primary colors (green, blue, and red) are transmitted in succession and reproduced on the receiver screen in the same manner.

SEQUENTIAL CONTROL.

Procedures for permitting a central control operator, in connection with a teletype communications network, to request and receive communications sequentially from each station in the network. The messages for each station are stored in the teleprinter until requested by the central control station. The central control point utilizes an assigned code letter combination for each network station. When a station receives its assigned call, the message is transmitted. The entire system can then operate effectively, without requiring each station to be warned continuously. Sequential control is especially valuable in handling routine traffic or uniform volume such as the collection of weather reports.

SER (SERIAL).

Pertaining to time-sequential transmission of, storage of, or logical operations on the parts of a word, using the same facilities for successive parts.

SER (SERVICE).

Conductors and equipment for delivering energy from the main, feeder, or transformer to the wiring system of the premises served.

SERIAL DIGITAL COMPUTER.

Computer in which the digits are handled serially. Mixed serial and parallel machines are frequently called serial or parallel, according to the way arithmetic processes are performed.

SERIAL MATTER.

Material to which a serial number is assigned and which is accounted for at prescribed intervals and upon specified occasions.

SERIES.

1. Indicated sum of a set of terms in a mathematical expression, as in an alternating series or an arithmetic series.
2. Method of arranging the components in a circuit by connecting them end to end to provide a single path for current.

SERIES CIRUIT.

Arrangement where two or more electrical devices are connected so that the total current must

flow through each of them in turn.

SERIES CONNECTION.

Connection in which the same current flows in turn through all the parts in a circuit.

SERIES EXCITATION.

Obtaining field excitation in a motor or generator by allowing the armature current to flow through the field winding.

SERIES FEED.

Application of the dc voltage to the plate or grid of a vacuum tube through the same impedance in which the alternating current flows.

SERIES FIELD.

Part of the total magnetic flux in a machine which is due to the series winding.

SERIES LOADING.

Loading in which reactances are inserted in series with the conductors of a transmission circuit.

SERIES MODULATION.

Modulation in which the modulating tube, the modulated amplifier tube, and the plate voltage supply are all in series.

SERIES MOTOR.

Commutator-type motor having armature and field windings in series. Characteristics are high starting torque, variation of speed with load, and extremely high speed on no-load.

SERIES MULTIPLE.

Type of switchboard jack arrangement in which a single line circuit appears before two or more operators, all appearances being connected in series.

SERIES RESISTOR OF AN INSTRUMENT.

Resistor which forms an essential part of the voltage circuit of an instrument and is used to adapt the instrument to operate on some designated voltage or voltages. It may be included in the instrument's structure, or it may be separate.

SERIES RESONANCE.

1. Resonance exhibited by a capacitor and an inductor connected in series, characterized by low series attenuation at the resonant or tuned frequency and high series attenuation at all others.

2. Steady condition which exists in a circuit comprising inductance and capacitance connected in series when the current in the circuit is in phase with the voltage across the circuit.

3. Condition existing in a circuit when the source of EMF is in series with an inductance and capacitance whose reactances cancel each other at the applied frequency, reducing the impedance to minimum.

SERIES T.

T-junction in which the impedances in the main guide and side arm are predominately additive, usually confined to the case of the junction of two waveguides, each propagating waves of the fundamental mode, when the axis of each guide is parallel to the direction of polarization in the other.

SERIES WOUND.

Motor or generator in which the armature and field windings are in series.

SERIES-FED VERTICAL ANTENNA.

Vertical antenna which is insulated from the ground and energized at the base.

SERIES-PARALLEL SWITCH.

Switch used to change the connections of lamps or other devices from series to parallel, or vice versa.

SERIES-RESONANT CIRCUIT.

Resonant circuit in which the capacitor and the inductor are in series with the applied voltage.

SERIES-WOUND MOTOR.

Commutator motor in which the field circuit and armature circuit are connected in series.

SERRATED PULSE.

Vertical or horizontal synchronizing pulse divided into a number of small pulses, each of which acts for the duration of half a line in a television system.

SERRATED ROTOR PLATE.

Rotor plate having radial slots to permit bending different sections of the plate either inward or outward to adjust the total capacitance of a variable capacitor section during alignment. (Reference: SLOTTED ROTOR PLATE.)

SERRODYNE MODULATION.

Classified definition. (Reference: AFM 100-50.)

SERVICE.

Conductors and equipment for delivering energy from the main, feeder, or transformer to the wiring system of the premises served.

"A". CAA service pertaining to collection and distribution by teletype or radio of hourly and special surface weather reports, and notices to airmen concerning field conditions, in-operative air navigation aids, etc.

AERODROME CONTROL. Air traffic control service for aerodrome traffic.

AERONAUTICAL BROADCASTING. Broadcasting service intended for the transmission of information related to air navigation.

AERONAUTICAL FIXED. Fixed service intended for the transmission of information relating to air navigation, preparation for and safety of flight.

AERONAUTICAL MOBILE. Mobile service between aircraft stations and aeronautical stations and aeronautical stations, or between aircraft stations.

AERONAUTICAL RADIO. 1. Service carried on between aircraft stations and land stations, and between aircraft stations.

2. Special radio for air navigation.

AERONAUTICAL RADIO NAVIGATION.

Radio navigation service intended for the benefit of aircraft.

AERONAUTICAL TELECOMMUNICATION.

Telecommunication service provided for any aeronautical purpose.

AIR DEFENSE ENGINEERING. Contract organization of specialists from the Western Electric Company and Bell Telephone Laboratories.

AMATEUR. Service of self-training, inter-communication, and technical investigations carried on by amateurs; that is, by duly authorized persons interested in radio techniques solely with a personal aim, and without pecuniary interest.

"B". CAA service pertaining to transmission and reception by teletype or radio of messages containing requests for and approval to conduct an aircraft flight; flight plans, inflight progress reports, and aircraft arrival reports.

BROADCASTING. Radio communication service may include transmissions of sound or transmissions by television, facsimile or other means.

"C". CAA service pertaining to collection and distribution by teletype or radio of three and six hourly weather data; pilot balloon reports, radiosonde, and other upper air observations and weather map data; airway, airway terminal, and regional forecasts and weather advisories.

"D". CAA service pertaining to radio broadcast of meteorological information; advisory messages and notices to airmen.

"E". CAA service pertaining to two-way radio communication with aircraft in flight.

"F". CAA service pertaining to dissemination by interphone of messages designed to expedite the flow, and to prevent the collision of, aircraft operating under instrument flight rule conditions.

FIXED. Service of radio communication between specified fixed points.

"G". CAA service, pertaining to aural and visual monitoring of radio aids to air navigation and the landlines and radio communications systems, to determine faulty operation.

"H". CAA service pertaining to operation of radiobeacons (nondirectional type) by ground stations.

"K". CAA flight assistance services (flight advisory, flight communications, flight planning, and landing area information services).

"L". CAA service pertaining to the operation of lighting facilities at landing areas, including obstruction markers, runway and boundary markers, floodlights, beacons and approach lights.

LAND MOBILE. Mobile service between base stations and land mobile stations, or between land mobile stations.

MARITIME MOBILE. Mobile service between ship stations and coast stations, or between ship stations.

MARITIME RADIO NAVIGATION. Radio navigation service intended for the benefits of ships.

METEOROLOGICAL AIDS. Service of emissions of special radio signals, intended solely for meteorological, including hydrological, observations and exploration.

MOBILE. Service of radio communication between mobile and fixed stations, or between mobile stations.

"O". CAA service pertaining to collection and distribution of overseas and foreign meteorological data for use in the preparation of weather maps, charts, and advisories required for long-range aircraft flights.

"R". CAA service pertaining to operation of radio ranges by ground stations.

SAFETY. Permanent or temporary radio service, the operation of which is directly related to the safety of human life and the safeguarding of property shall be considered a safety service.

STANDING FREQUENCY. Radio communication service for the transmission of standard and specified frequencies of known high accuracy, intended for general reception.

"W". CAA airway weather observational service.

"X". CAA service pertaining to the ascertainment by ground station personnel (using radio direction-finding equipment), and delivery to pilots in flight, of information relative to the fixed location, bearing, or heading of their aircraft.

SERVICE AREA.

1. Area surrounding a broadcast station in which

the signal is strong enough for satisfactory reception at all times, and not subject to objectionable interference or fading.

2. Secondary service area means the area served by the sky wave, not subject to objectionable interference. The signal is subject to intermittent variations in intensity.

3. Intermittent service area means the area receiving service from the ground wave, but beyond the primary service area and subject to some interference and fading.

SERVICE BAND.

1. Band of frequencies allocated to a given class of radio service.

2. Band of frequencies allocated by the Federal Communications Commission to a specific class of radio communication service.

SERVICE CORROSION.

Service corrosion of a dry cell in the consumption of the negative electrode as a result of useful current delivered by the cell.

SERVICE GROUND.

Ground connection to a service equipment and/or a service conductor.

SERVICE LINE.

Length of time required for a primary cell or battery to reach a specified final electrical condition on a service test representative of normal usage.

SERVICE MESSAGE.

Message between communications personnel pertaining to any phase of traffic handling, communication facilities, or circuit condition.

SERVICE OSCILLATOR.

Test instrument that can be used to generate the various radio-frequency signals required for alignment and servicing of radio equipment. (Reference: RADIO-FREQUENCY SIGNAL GENERATOR.)

SERVICE OUTLET.

Outlet for providing power conveniently on the front of the equipment.

SERVICE STOCK.

Predetermined quantities of specific items conveniently located for issue to a maintenance shop, repair activity, personnel-processing activity, T. O. or T. A. organization, or subbase not obtaining these items from other sources, for use in performing the operation of that activity.

SERVICE SWITCH.

Switch, usually in a service box, used to disconnect the line voltage from the circuits serviced by the box.

SERVICE TEST MODEL.

Model to be used for test, under service conditions, for evaluation of suitability and performance. It shall closely approximate the final design, have the required form factor, and employ approved parts or their interchangeable equivalents.

SERVICE UNIT.

Equipment of facilities utilized for maintenance communications and fault indications on a microwave system.

SERVICING.

Act of occupation of performing work or meeting a general demand.

SERVING OF A CABLE.

Wrapping applied over the core of a cable before the cable is leaded, or over the lead if the cable is armored.

Note: Materials commonly used for serving are jute, cotton, or duck tape.

SERVO AMPLIFIER UNIT.

Unit of a servo system in which information from a synchro is amplified to control the speed and direction of the servomotor output.

SERVO NOISE.

Hunting action of the tracking servo mechanism of a radar, which results from backlash and compliance in the gears, shafts, and structures of the mount.

SERVO SYSTEM.

1. Complete electromechanical system for amplifying and transmitting accurate mechanical

position from one point to another by electrical means.

2. Signal-transmitting system. The purpose of a servo is to reproduce a signal at a place, power level, or form different from the original signal, but under its control. The servo signal is usually mechanical. The circuit elements are motors, gears, or thermostats.

3. Electromechanical system which is used for positioning one element of a system in relation to another. The change in position of one element of the system results in the production of an error voltage which is used indirectly to cause a motor to drive the other element of the system to the point where the error voltage no longer exists.

SERVOMECHANISM.

Hook-up of an electric generator and an electric motor shaft follows in unison the rotation of the generator shaft. Used for remote mechanical control.

SERVOMOTOR.

Mechanism to make force act at a distance, proportional to the force impressed upon it, as in gyrocontrol mechanisms which guide rudders on steered rockets. In particular, pneumatic or hydraulic cylinders used for this purpose.

SET.

1. Assembly of electrical apparatus, the parts of which operate together. Usually in a common case or cover.
2. Place a storage device in a prescribed state.
3. Place a binary cell in the "one" state.

SET ANALYZER.

Test instrument designed to permit convenient measurement of voltages and currents for servicing purposes.

SET NOISE.

Inherent, random noise in a receiver. It consists of fluctuation noises due to thermal currents in resistors and variations in emission currents of vacuum tubes.

SET, COMPOSITE.

Signaling circuit by which two signaling or telegraph legs may be superimposed on a two wire, interoffice trunk by means of one of a balanced pair of high-impedance coils connected to each side of the line with an associated capacitor network.

SET, HAND.

Receiver and transmitter mounted on a single frame.

SET, SIMPLEX.

Means of superimposing a signal or telegraph leg on a phantom circuit by using one side of the phantom as a signal leg.

SETTING.

Arrangement and alignment of the variable elements of a cryptographic device or machine at any moment during its operation.

SETUP.

Ratio between reference black-level and reference white-level television signals, both measuring from blanking level. It is usually expressed in per cent.

SEVA (SYSTEM EVALUATION TEST).

Portion of installation testing procedure which encompasses the entire direction central.

SEXADECIMAL.

(Electronic computer) (Reference: POSITIONAL NOTATION.)

SF (STANDARD FORM).

SFEL (STANDARD FACILITY EQUIPMENT LIST).

SFERICS.

Static direction-finding networks. Contraction of term atmospherics.

SG.

Generally used to denote the screen-grid electrode of a vacuum tube.

SG (STANDING GROUP).

Permanent subcommittee of the Military Committee of the North Atlantic council, serving as an executive body, and composed of the representatives of the Chiefs of Staff of the United States, France and the United Kingdom.

SG (SINGLE GROOVE).

Used to identify single groove insulators.

SGLO (STANDARD GROUP LIASION OFFICER TO THE NORTH ATLANTIC COUNCIL).

Member of the North Atlantic Council delegated to assure cooperation and unity of purpose in working toward a common goal.

SGM (STANDING GROUP MILITARY SECTION).

Armed Forces delegates to the North Atlantic Council.

SGSP (SINGLE-GROOVE, SINGLE-PETTICOAT).

Used to identify single-groove, single-petticoat insulators.

SHADED-POLE MOTOR.

Single-phase, induction motor provided with an auxiliary short-circuited winding or windings displaced magnetic position from the main winding.

SHADING.

Television process of compensating for the spurious signal generated in a camera tube during trace intervals.

SHADING RING.

1. Heavy, copper ring sometimes placed around the central pole piece of an electrodynamic loudspeaker to serve as a shorted turn that cancels hum voltage of the field coil.
2. Copper ring that is set into part of a pole piece on small ac motors to produce a rotating magnetic field for starting purposes.

SHADING SIGNAL.

Television camera, signal that serves to increase the gain of the amplifier in the camera during those intervals of time when the electron beam is on an area corresponding to a dark portion of the scene being televised.

SHADOW ATTENUATION.

Attenuation of radio waves over a sphere in excess of that over a plane when the distance over the surface and other factors are the same.

SHADOW PHOTOMETER.

Type of photometer in which the shadows cast

by a standard light source and the light source under test are compared and brought to equality by varying the relative distances of the sources from the screen. (Reference: RUMFORD PHOTOMETER.)

SHADOW REGION.

Region in which, under normal propagation conditions, the field strength from a given transmitter is reduced by some obstruction which renders effective radio reception of signals or radar detection of objects in this region improbable.

SHADOW TUNING INDICATOR.

Special vacuum tube which shows, by means of a moving shadow, the accuracy with which a radio receiver is tuned. (Reference: CATHODE-RAY TUNING INDICATOR.)

SHADOWGRAPH TUNING INDICATOR.

Shadow tuning indicator.

SHADOWGRAPHING.

Process of inspecting phonograph needles and other small objects by producing a greatly enlarged image or shadow on a viewing screen on which permissible variations in shape are marked for comparison.

SHANK.

Part of a phonograph needle which is clamped into position by a setscrew in the pick-up or cutting head.

SHAPE (SUPREME HEADQUARTERS, ALLIED POWERS EUROPE).

Headquarters superior to all others for the allied powers in Europe.

SHAPE FACTOR.

Form factor; a value that takes the shape of a coil into account when computing its inductance.

SHAPED BEAM ANTENNA.

Antenna with a directional pattern which, over a certain angular range, is of a special shape for some particular use.

SHAPING.

Adjustment of ppi pattern set up by rotating magnetic field.

SHAPING NETWORK.

Electrical network designed to be inserted in a circuit to improve its transmission properties, impedance properties, or both.

SHARP TUNING.

Responsive to a limited range of frequencies.

SHARPENER AMPLIFIER.

Peaking circuit plus an amplifier.

SHAVING DISK RECORDING.

Process of removing material from a wax disk of recording material to obtain a plane surface.

SHEAR MODE CRYSTAL.

Mechanical vibration taking place in a direction parallel to the two parallel major plane faces of the oscillator plate.

SHEAR WAVE.

Wave in an elastic medium which causes an element of the medium to change its shape without change of volume.

SHEARER TUBE.

X-ray tube having a metal envelope and porcelain insulation around the electrode leads.

SHEATH.

1. External conducting surface of a shielded transmission line.
2. Metal wall of a waveguide.
3. Part of a discharge in a rarefied gas in which there is a space charge due to an accumulation of electrons or ions.

SHEATH-RESHAPING CONVERTER.

Wave converter in which the change of wave pattern is achieved by gradual reshaping of the sheath of the waveguide and of conducting metal sheets mounted longitudinally in the guide.

SHEET GRATING.

Three-dimensional grating consisting of thin, longitudinal, metal sheets extending along the inside of a waveguide for a distance of about a wavelength, and used to stop all waves except one predetermined wave that passes unimpeded. A sheet grating is thus a highly effective wave filter.

SHELF.

1. Arrangement of switches, usually mounted in rows, the banks of which are multiplied and connected to a terminal board.
2. Step-by-step switches are mounted on shelves of standard capacity. These shelves are usually of angle-iron construction and mounted on 7 feet to 12 feet bays consisting of angle-iron uprights.

MULTIPLE. Shelf in a switchboard on which the multiple cables are laid.

SHELF CORROSION.

Dry cell consumption of the negative electrode as a result of local action.

SHELF DEPRECIATION.

Depreciation in service capacity of a primary cell while standing unused.

SHELF LIFE.

Life, when not in service, of electrical components which deteriorate with time, such as batteries and electrolytic capacitors.

SHELL.

1. Group of electrons, supposed to form part of the outer structure of an atom, and having a common energy level.
2. Lamina of magnetic material in which the lines of induction are in the direction of its thickness. Its strength is the magnetic moment per unit area.

SHELL-TYPE MOTOR.

Stator and rotor without shaft, end shields, bearings, or conventional frame. Separate fans or fans larger than the rotor are not included.

SHELL-TYPE TRANSFORMER.

Transformer in which the magnetic circuit completely surrounds the windings.

SHEPPARD TUBE.

Sheppard-Pierce tube, type 723A is a microwave local oscillator, all-metal, velocity-modulated tube.

SHF (SUPER HIGH FREQUENCY).

Frequency band: 3,000 to 30,000 megacycles.
Wavelength: 10 to 100 centimeters.

SHIELD.

1. Housing of metal, usually aluminum or copper, placed around a radio circuit. The housing prevents interaction between circuits by providing a low-resistance and reflecting path to ground for high-frequency radiations.

2. Sheet or core of iron, enclosing instruments or radio parts to protect them from stray magnetic fields by providing a convenient path for the magnetic lines of force. (Reference: ELECTRIC SHIELD MAGNETIC SHIELD.)

SHIELD FACTOR.

Ratio of noise (or induced current or voltage) in a telephone circuit when a source of shielding is present to the corresponding quantity when the shielding is absent.

SHIELD WIRE.

Wire employed for the purpose of reducing the effects on electric supply or communication circuits of electromagnetic fields from extraneous sources.

SHIELD-GRID THYRATRON.

Thyratron having a shield-grid envelope surrounding the cathode, and usually placed at cathode potential, with a control grid in the form of a small ring guarding the exit hall at the top of the shield grid. Another part of the shield almost completely surrounds the anode and shields the control grid from the action of the anode. This arrangement prevents the control grid from being heated by the cathode or contaminated by material evaporated or knocked from the cathode.

SHIELDED CABLE.

One or more insulated conductors surrounded by a metallic braid or tape covering.

SHIELDED JOINT.

Cable joint having its insulation so enveloped by a conducting shield that substantially every point on the surface of the insulation is at ground potential, or at some predetermined potential with respect to ground.

SHIELDED LINE.

Transmission line, the elements of which confine the propagated waves to an essentially finite space. The external conducting surface is called the sheath.

SHIELDED PAIR.

Two-wire transmission line surrounded by a metallic sheath.

SHIELDED WIRE.

Insulated wire covered with a metal shield, usually of tinned, braided copper wire.

SHIELDED X-RAY TUBE.

X-ray tube inclosed in a grounded metal container except for a small window through which X-rays emerge.

SHIELDED-CONDUCTOR CABLE.

Cable in which the insulated conductors or conductor are inclosed in a conducting envelope or envelopes, so constructed that substantially every point on the surface of the insulation is at ground potential or at some predetermined potential with respect to ground.

SHIELDING.

Metallic covering which is used to prevent magnetic or electrostatic coupling between adjacent circuits or circuit elements.

SHIELDING HARNESS.

Composite shielding system furnishing a metallic covering for all the low-tension and high-tension cables up to magneto and plugs.

SHIFT.

1. Mechanical action which takes place when the platen of a teletypewriter is moved from the letters to the figures position.

2. Displacement of an ordered set of characters in an electronic computer, one or more places to the left or right. If the characters are the digits of a numerical expression, a shift may be equivalent to multiplying by a power of the base.

SHIM.

Thin section of wood, rubber, or any other material used for filling cracks.

SHIMMER.

Instability displayed by a window echo, due to propagation conditions, to phase changes in the window elements, or to other variations.

SHIP ERROR.

Radio direction-finder error due to reradiation of radio waves by the metal structure of a ship.

SHIP READING MARKER.

Electronic radial sweep line on a PPI scope indicating the heading of the ship on which the equipment is installed.

SHIP SERVICE.

Radio communication service of public corresponding carried on between ship stations and coastal stations or between ship stations and maritime mobile stations.

SHIP STATION.

Radio station, licensed for ship service, which is located on board a ship actually afloat and not permanently moored.

SHIP TO SURFACE VESSEL.

Designation of a radar used to detect surface vessels from a patrol surface craft.

SHO (SHORE).

1. Land bordering a body of water.
2. In certain locations, the land as distinguished from the sea, as in shore leave.

SHOCK EXCITATION.

Initiation of oscillations in a resonant circuit of a vacuum-tube oscillator by the pulse, due to application of electrode voltages.

SHOCK MOUNTING.

Reception of signals from a powerful nearby radio station, regardless of how a radio receiver is tuned, due to forced oscillations.

SHOCK WAVES.

Sound waves set up by an object moving at supersonic speeds, causing increased energy losses.

SHOE.

Spring device designed to make contact with the springs of a protector assembly or the punchings of one circuit on a connecting block.

SHORAN.

1. Abbreviated name for a short-range, radio-navigation system.
2. Precision position-fixing system using a pulse transmitter and receiver and two transponder beacons at fixed points.

SHORAN A CORRECTION.

Correction which must be applied to the map distance, ground station to the target, to obtain the true distance along the curved shoran ray path between the aircraft and the ground station.

SHORE.

1. Land bordering a body of water.
2. In certain locations, the land as distinguished from the sea, as in shore leave.

SHORE EFFECT.

Bending of radio waves toward the shore line when traveling over water, due presumably to the slightly greater velocity of radio waves over water than over land. This effect causes errors in radio direction-finder indications.

SHORE PARTY.

Special task organization formed for the purpose of facilitating the landing and movement off the beaches of troops, equipment, and landing force supplies, and for the evacuation from the beaches of casualties and prisoners of war. It comprises elements of both the naval and landing forces; its activation and command are a function of the landing force.

SHORE-TO-SHIP COMMUNICATION.

Radio communication between a shore station and a ship at sea.

SHORT.

Connection of two conductors of a circuit through a very low resistance.

SHORT CIRCUIT.

Low-resistance connection between two points of different potential in a circuit, usually accidental and usually resulting in excessive current flow that may cause damage.

SHORT CIRCUIT IMPEDANCE.

Of a line or four-terminal network, the driving-point impedance when the end is short circuited.

SHORT PLUG.

Plug designed to connect the springs of a jack together or short them.

SHORT RANGE.

Classification of ground radar sets by slant range. Applied to equipment with a maximum range exceeding 25 miles, but less than 75 miles.

SHORT SUPPLY.

Item is in short supply when the total stock on hand and anticipated receipts during a given period are less than the total estimated demand during that period.

SHORT TITLE.

Combination of letters and/or numbers assigned to a specific document or device. Short titles used by themselves are unclassified.

SHORT WAVE.

Refers to radio frequencies above the commercial broadcasting band used for sky-wave communication. Range is from 1.5 to 30 megacycles.

SHORT-CONTACT SWITCH.

Selector switch in which the width of the movable contact is greater than the distance between contact clips, so that the new circuit is contacted before the old one is broken. This avoids noise during switching.

SHORT-GATE GAIN.

Video gain on short-range gate.

SHORT-LEVER ARMATURE RELAY.

Specially constructed armature, having a short lever, which provides a releasing lag (release delay) greater than that which is possible through the use of a heelpiece-end copper slug and a standard armature.

SHORT-RANGE NAVIGATION AID.

Aid usable only at a distance at, or less than, radio line of sight.

SHORT-TIME DUTY.

Requirement of service that demands operation at a substantially constant load for a short and definitely specified time.

SHORT-TIME RATING.

Rating that defines the load which can be carried

for a short and definitely specified time with the machine, apparatus, or device at approximately room temperature at the time the load is applied.

SHORT-WAVE CONVERTER.

Vacuum-tube unit designed to be connected between a receiver and its antenna system to permit reception of frequencies higher than those the receiver ordinarily handles. It consists essentially of an oscillator mixer first-detector stage like that in a superheterodyne receiver, used to convert the high-frequency signals to a broadcast-band frequency to which the receiver can be tuned.

SHORT-WAVE TRANSMITTER.

Radio transmitter that radiates short waves, ordinarily shorter than 200 meters.

SHORTED OUT.

Made inactive by connecting a heavy wire or other low-resistance path around a device or portion of a circuit.

SHOT.

Rocket flight.

SHOT EFFECT.

Noise voltages developed as a result of the random nature of electron travel within electron tubes. The effect is characterized by a steady hiss in audio reproduction, and by "snow" or "grass" in video reproduction.

SHOWER.

Production of two or more associated ion pairs at the same instant, apparently due to cosmic rays.

SHUNT.

1. Precision, low-value resistor placed across the terminals of an ammeter to increase its range.
2. Any part connected, or the act of connecting any part, in parallel with some other part.
3. Branch of an electric circuit having its winding in parallel with the external or line circuit.

SHUNT FEED.

Application of the dc plate or grid voltage without passing through the ac load impedance. (Reference: PARALLEL FEED.)

SHUNT FIELD.

Part of the magnetic flux produced in a machine by the shunt winding (connected across the voltage source).

SHUNT LEADS.

Pair of leads that connects the current circuit of an instrument to a shunt. These leads are essentially a part of the instrument, and should not be shortened or otherwise altered.

SHUNT LOADING.

Loading in which reactances are applied in shunt across the conductors.

SHUNT NEUTRALIZATION.

Providing a reactance path externally from the plate to the grid of a radio-frequency amplifier tube to offset the effects of the grid-plate interelectrode capacitance. The external path may be a variable capacitor in series with an inductor.

SHUNT NONINTERFERING FIRE ALARM SYSTEMS.

Manual fire alarm system employing stations and circuits that, in case two or more stations in the same premises are operated simultaneously, the signal from the operated box electrically closest to the control equipment is transmitted and other signals are shunted out.

SHUNT T.

T-junction in which the admittances (reciprocal impedances) in the main guide and side arm are predominantly additive, usually confined to the case of the junction of two waveguides, each propagating waves of the fundamental mode, when the axis of each guide is at right angles to the direction of polarization in the other.

SHUNT-FED VERTICAL ANTENNA.

Vertical antenna connected to the ground at the base and energized at a point suitably positioned above the grounding point.

SHUNT-FIELD RELAY.

Special type of polarized relay, having two coils on opposite sides of a closed magnetic circuit which operates when the currents in its two windings flow in the same direction, but does not

operate when the currents in its two windings flow in opposite directions.

SHUNT-WOUND.

Windings so designed in a motor or generator, that armature and field windings are parallel.

SHUNT-WOUND MOTOR.

DC motor in which the field circuit and armature circuit are connected in parallel.

SHUTTER.

Device that prevents light from reaching the light-sensitive surface in an ordinary or television camera, except during the desired period of exposure. (Reference: FOCAL PLATE SHUTTER.)

SIA (STANDARD INSTRUMENT APPROACH).

Usual approach for landing made without visual reference to the ground by use of aircraft instruments and ground-based electronic or communication systems or devices.

SID (SITUATION DISPLAY).

Presentation in tabular and vector-message format formed by various combinations of 64 numbers and symbols on the face of a situation-display tube in a SAGE system.

SID (STANDARD INSTRUMENT DEPARTURE).

Usual take-off made without visual reference to the ground by use of aircraft instruments and ground-based electronic or communication systems or devices.

SID (SUDDEN IONOSPHERIC DISTURBANCE).

Sudden increase of ionization density in low parts of the ionosphere, caused by a bright solar chromospheric eruption. It gives rise to a sudden increase of absorption in radio waves propagated through the low parts of the ionosphere, and sometimes to simultaneous disturbances of terrestrial magnetism and earth currents. The change takes place within a few minutes, and conditions usually return to normal within a few hours.

SIDE.

Two-wire circuit forming one part or side of a phantom circuit.

SIDE CIRCUIT.

Circuit arranged for deriving a phantom circuit. In two-wire side circuits, the conductors of each side circuit are placed in parallel to form a side of the phantom circuit. In four-wire side circuits, the lines of the two side circuits, which rearranged for transmission in the same direction, provide a one-way phantom channel for transmission in that same direction; the two conductors of each line are placed in parallel to provide a side for the phantom channel. Similarly, the conductors of the other two lines provide a phantom channel for transmission in the opposite direction.

SIDE ECHO.

Echo due to a side lobe of an antenna.

SIDE FACES.

Term loosely applied to the M (1010) prism faces quartz. Not recommended.

SIDE FREQUENCY.

One of the frequencies of a sideband.

SIDE LOBE.

Portion of the beam from an antenna, other than the main lobe, and usually much smaller.

SIDE-CIRCUIT LOADING COIL.

Loading coil for introducing a desired amount of inductance in a side circuit and a minimum amount of inductance in the associated phantom circuit.

SIDE-CIRCUIT REPEATING COIL.

Repeating coil that functions simultaneously as a transformer at a terminal of a side circuit and as a device for superposing one side of a phantom circuit on that side circuit.

SIDEBAND POWER.

Power contained in the sidebands. It is this power to which a receiver responds, not to the carrier power, when receiving a modulated wave.

SIDEBANDS.

Frequency bands on both sides of the carrier frequency within which fall the frequencies of the wave produced by the process of modulation.

2. Wave components lying within such bands.
- Note. In the process of amplitude modulation with a sine-wave carrier, the upper sideband includes the sum (carrier plus modulating) frequencies; the lower sideband includes the difference (carrier minus modulating) frequencies.

SIDEREAL.

Period of complete revolution of a planet or satellite relative to the background of stars.

SIDETONE.

Signal which reaches a telephone receiver from the associated transmitter of the same subscriber's set by way of a local path within that set itself.

SIDETONE TELEPHONE SET.

Telephone set which does not include a balancing network for the purpose of reducing sidetone.

SIDEWINDER.

Air-to-air missile developed for the Navy. The nomenclature is XAAM-N-7.

SIGHTING.

Actual visual contact. Does not include other contacts, which must be reported by type, such as radar and sonar contacts.

sig (SIGNAL).

1. Any transmitted electrical impulse.
2. Operationally, a type of message, the text of which consists of one or more letters, words, characters, signal flags, visual displays or special sounds, with prearranged meanings, and which is conveyed or transmitted by visual, acoustical or electrical means.
3. A wave that conveys desired intelligence. The signal may consist of an electromagnetic wave in space, the current in or voltage impressed upon a circuit element, or the sound impinging upon the ear from a loud speaker or headset.
4. Intelligence, message, or effect conveyed in communications and other electronic applications.

SigC (SIGNAL CORPS).

Corps of the US Army, charged with the development, maintenance, and operation of communications systems within the Army.

SIGN DIGIT.

Character used in electronic computers to designate the algebraic sign of a number.

SIGN OF POTENTIAL DIFFERENCE.

Sign of the potential difference between two points, one of which is taken as a reference point; is positive if work must be expended to transfer positive electricity from the reference point to the other point.

SIGN ON.

To commence broadcasting with a statement of station frequency and power.

SIGNAL.

1. Any transmitted electrical impulse.
2. Operationally, type of message, the text of which consists of one or more letters, words, characters, signal flags, visual displays or special sounds, with prearranged meanings, and which is conveyed or transmitted by visual, acoustical or electrical means.
3. A wave that conveys desired intelligence. The signal may consist of an electromagnetic wave in space, the current in or voltage impressed upon a circuit element, or the sound impinging upon the ear from a loud speaker or headset.
4. Intelligence, message, or effect conveyed in communications and other electronic applications.

A-N. Radio-range, quadrant-designation signals which indicate to the pilot whether he is on course or to the right or left of course.

COLOR DIFFERENCE. Television, electrical signal which, when added to the monochrome signal, produces a signal representative of one of the tristimulus values (with respect to a state set of primaries) of the transmitted color.

COLOR PICTURE. Electric signal, in television, which represents color picture information consisting of a monochrome component plus subcarrier modulated with color information, excluding synchronizing signals.

COMPOSITE PICTURE. Television signal which consists of the blanked picture signal and the synchronizing signals.

ERROR. Signal, in an automatic control device, whose magnitude and sign are used to correct the alignment between the controlling and the controlled elements.

EXECUTIVE. Transmission which indicates the instant at which messages are to be executed.

GHOST. Unwanted signals appearing on the screen of the radar indicator, caused, for example, by echoes which experience multiple reflections before reaching the receiver.

INTERROGATION. Signal sent out by an interrogator to a ship or aircraft whose identity is unknown.

LINE DROP. Drop signal associated with a subscriber line on a manual switchboard.

LUMINANCE. Signal wave in television, which is intended to have exclusive control of picture luminance.

MINIMUM DISCERNIBLE. Receiver input power level that is just sufficient to produce a discernible signal in the receiver output, used as a receiver sensitivity test.

MONOCHROME. 1. Signal wave in monochrome television transmission, for controlling the luminance values in the picture, but not the chromaticity values.

2. Part of the signal wave, in color television transmission, which has the major control of the luminance of the color picture and which controls the luminance of the picture produced by a conventional monochrome receiver.

ON-COURSE. Steady, monotone radio signal which indicates to the pilot that he is neither too far to the right nor to the left of the radio beam being followed.

OPERATING. Three-letter group used as necessary in connection with operations or communications to convey orders, instructions, requests, reports, and information to facilitate communications.

PICTURE. Television signal resulting from the scanning process.

RECOGNITION. Prearranged signal by which individuals or units may identify each other.

SPURIOUS. Unwanted signal, either generated in the equipment itself or having external origin (noise).

SUPERVISORY. Signal for attracting the attention of an attendant to a duty in connection with switching apparatus and the like.

SYNCHRONIZING. Signals employed for the synchronizing of scanning in television.

SIGNAL AREA.

Selected part of an aerodrome used for the display of ground signals so that they will be visible to aircraft in the air.

SIGNAL BIAS.

Form of teletypewriter signal distortion brought about by the lengthening or shortening of pulses during transmission. When marking pulses are all lengthened, a marking signal bias results; when marking pulses are all shortened, a spacing signal bias results.

SIGNAL CORPS.

Corps of the US Army, changed with the development, maintenance, and operation of communications systems within the Army.

SIGNAL DISTORTION GENERATOR.

Instrument furnished and designed to apply distortion on a signal for the purpose of ranging and adjusting teletypewriter equipment, or for furnishing a clear signal.

SIGNAL ELEMENT.

Shortest interval of a signaling code with undistorted signals in telegraph communication. It is considered to be of unit duration in building up signal combinations.

SIGNAL GENERATOR.

Instrument which produces signals of known frequencies, for testing radio, television, and other electronic apparatus.

SIGNAL LAMP.

Lamp that indicates the existence of certain conditions in a circuit by its illumination and extinction, as signal lamps on switchboards or pilot-lamps in radio sets.

SIGNAL LETTERS.

International visual and radio call sign of a ship.

SIGNAL OFFICER.

1. Officer commissioned in the US Army Signal Corps.
2. Officer in charge of a communications branch.

SIGNAL OPERATION INSTRUCTIONS.

Series of orders issued for technical control and coordination of the signal communication activities of a command.

SIGNAL PLATE.

Metal plate that backs up the mica sheet containing the mosaic in one type of cathode-ray television camera tube. The capacitance existing between this plate and each globule of the mosaic is acted on by the electron beam to produce the television signal.

SIGNAL SHAPING NETWORK.

Electric network inserted in a telegraph circuit, usually at the receiving end, for improving the wave shape of the signals.

SIGNAL SHIFTER.

Variable-frequency, vacuum-tube oscillator intended for use with amateur radio transmitters to permit shifting to a less crowded frequency within a given band.

SIGNAL STRENGTH.

Strength of the signal produced by a radio transmitter at a particular location, usually expressed as millivolts per meter of effective height of the receiving antenna employed.

SIGNAL TRACING.

Technique of tracing a radio signal through each stage in order to locate a faulty stage.

SIGNAL UNIT.

Line signaling device associated with a switchboard drop or toll line circuit as distinguished from a ringer.

SIGNAL VOLTAGE.

Effective (root-mean-square) voltage value of a signal.

SIGNAL WAVE.

Wave, whose shape conveys some intelligence, message, or effect.

SIGNAL WINDING.

Control winding, of a saturable reactor, to which the independent variable (signal wave) is applied.

SIGNAL, INTERNATIONAL CODE.

Code adopted by many nations for international communication. The code uses combinations of letters to stand for words, phrases, and sentences. The letters are transmitted by the hoisting of international alphabet flags or by transmitting their dot and dash equivalents in the International Morse Code. (Reference: INTERNATIONAL SIGNAL CODE.)

SIGNAL-LAMP RELAY.

Relay controlling the circuit of a signal lamp.

SIGNAL-TO-NOISE RATIO.

Ratio of the value of the signal to that of the noise.

Note 1. This ratio is usually expressed in terms of peak values in the case of impulse noise and in terms of the root-mean-square values in the case of the random noise.

Note 2. Where there is a possibility of ambiguity, suitable definitions of the signal and noise should be associated with the term; for example; peak-signal to peak-noise ratio, root-mean-square signal to root-mean-square noise ratio, peak-to-peak signal to peak-to-peak noise ratio, etc.

Note 3. This ratio is often expressed in decibels.

Note 4. This ratio may be a function of the bandwidth of the transmission system.

SIGNAL-TO-NOISE RATIO.

1. Ratio of the magnitude of the signal to that of the noise; often expressed in decibels. This ratio is expressed in many different ways; for

example, in terms of peak values in the case of impulse noise and in terms of root-mean-square values in the case of random noise, the signal being assumed sinusoidal. In specific cases other measures of signal and noise may be used if clearly stated.

2. Signal-to-noise ratio at any point of television transmission is the ratio in decibels of the maximum peak-to-peak voltage of the video television signals, including synchronizing pulse, to the root-mean-square voltage of the noise. Television transmission signal-to-noise ratio is defined in this way because of the difficulty of defining the rms value of the video signal or the peak-to-peak value of random noise.

3. Comparison of the amount of signal to the amount of noise by means of a fractional ratio, measuring both elements in the same units.

4. Ratio of the intensity of the desired signal to that of undesired noise signal.

5. Ratio of the root-mean-square facsimile signal level to the root-mean-square noise level. In the facsimile systems, this signal-to-noise ratio may be very misleading, as the peak amplitude of the noise is usually what interferes with the facsimile signals.

SIGNAL-TRACING INSTRUMENT.

Test instrument designed to permit tracing the progress of a radio signal through radio equipment.

SIGNAL WAVE ENVELOPE.

Contour of a signal wave which is composed of a series of wave cycles.

SIGNALING—20, 135, or 1,000 cycles.

Signaling systems using current alternating at the rate of 20, 135, or 1,000 times per second.

SIGNALING BATTERY.

Source of energy used to operate lamps and alarms for calling attention, to show the progress of a call, or to operate stepping magnets.

SIGNALING CHANNEL.

Tone channel used for signaling purposes.

SIGNALING KEY.

Key used in wire telegraphy or radio-telegraphy to control the sequence of the current impulses that form the code signals.

SigO (SIGNAL OFFICER).

1. Officer commissioned in the US Army Signal Corps.
2. Officer in charge of a communications branch.

SILENCER.

Inclosing vessel used to reduce the noise made by the spark in early spark-type radio transmitters.

SILENT DISCHARGE.

Gradual and nondisruptive discharge of electricity from a conductor into the atmosphere. Sometimes accompanied by the production of ozone.

SILENT PERIOD.

Period during each hour in which ship and shore radio stations must remain silent and listen for distress calls.

SILICA GEL.

Chemical, having moisture absorption properties, which is used in connection with the dehydration of wave guides, coaxial lines, pressurized components, shipping containers, etc.

SILICON.

Metallic element often mixed with iron or steel during smelting to provide desirable magnetic properties for transformer core materials.

SILICON DETECTOR.

Crystal detector consisting of a metal contact held against a piece of silicon that is in a particular crystalline state, used to rectify or detect radio signals.

SILICON STEEL.

Steel, containing three to five percent silicon, having desirable magnetic qualities for use in the iron cores of transformers and other ac devices.

SILK-COVERED WIRE.

Wire covered with one or more layers of fine floss silk. It is superior to cotton insulation be-

cause of its better insulating qualities per given thickness of covering and better moisture-resisting properties, and because it permits getting more turns of a given wire in a given space.

SILVER.

Precious metal, having better electrical conductivity than copper, used for contact points of relays and switches because it does not readily corrode. The chemical symbol is Ag.

SILVER BULLET.

A silver-plated, bullet-shaped connector, for joining two similar coaxial lines.

SILVERSTAT REGULATOR.

A multitapped resistor, the taps of which are connected to single-leaf silver contacts. Variation of voltage causes a solenoid to open or close these contacts, shorting out more or less of the resistance in the excitor circuit as a means of regulating the output voltage to the desired value.

SIM (SIMULATOR).

In air defense, an individual in the training and battle simulation section who is responsible for the insertion and control of simulated interceptor and noninterceptor tracks.

SIM SUP (SIMULATION SUPERVISOR).

Noncommissioned officer in the training and battle simulation section who supervises all functions of the section in a SAGE center.

SIMPLE CATENARY SUSPENSION.

Construction in which the contact wire or wires are suspended from a single messenger.

SIMPLE HARMONIC CURRENT.

Symmetrical, alternating current, the instantaneous values of which are equal to the products of a constant, and the sine or cosine of an angle having values varying linearly with time. Thus: $i = I_m \sin(\omega t \pm a)$ or $i = I_m \cos(\omega t \pm a)$ where I_m is the maximum value of the current. (Reference: SIMPLE SINUSOIDAL CURRENT and SINUSOIDAL CURRENT.)

SIMPLE HARMONIC QUANTITY.

A quantity which is the product of a constant and the sine or cosine of an angle having values

varying linearly with the values of the independent variable. Thus, $Y = A \sin(wx \pm a)$ and $Y = A \cos(wx \pm a)$ are simple sinusoidal quantities, where A , w and a are constants.

Note. Any quantity that can be represented by a sine function can also be represented by a cosine function. (Reference: SIMPLE SINUSOIDAL QUANTITY and SINUSOIDAL QUANTITY.)

SIMPLE SINUSOIDAL CURRENT.

Symmetrical, alternating current, the instantaneous values of which are equal to the products of a constant, and the sine or cosine of an angle having values varying linearly with time. Thus: $i = I_m \sin(wt \pm a)$ or $i = I_m \cos(wt \pm a)$ where I_m is the maximum value of the current. (Reference: SINUSOIDAL CURRENT and HARMONIC CURRENT.)

SIMPLE SINUSOIDAL QUANTITY.

Quantity which is the product of a constant and the sine or cosine of an angle having values varying linearly with the values of the independent variable. Thus, $y = A \sin(w x \pm a)$ and $Y = A \cos(wx \pm a)$ are simple sinusoidal quantities, where A , w and a are constants.

Note. Any quantity that can be represented by a sine function can also be represented by a cosine function. (Reference: SIMPLE HARMONIC QUANTITY and SINUSOIDAL QUANTITY.)

SIMPLE TONE.

Tone which consists of a single frequency.

SIMPLE WOUND RELAY.

One where the core is wound with one winding.

SIMPLEX.

1. Method of obtaining an additional telegraph channel by the use of repeating coils.
2. Method of operation of a communication circuit where each end can either receive or transmit, but not do both simultaneously. The usual press to talk operation. A radio circuit must always be simplex when only a single carrier frequency is used.

SIMPLEX CIRCUIT.

1. Radio circuit which is capable of transmissions in both directions, but not simultaneously.
2. Characteristics of circuit which permit communications between stations in both directions but not simultaneously.
3. Circuit derived from an existing wire circuit by the use of center-tapped repeating coil. This additional circuit must use another wire conductor or ground return to complete its path.

SIMPLEX COIL.

Repeating coil used on a pair of wires to derive a commercial simplex circuit.

SIMPLEX OPERATION.

Method of operation in which communication between two stations takes place in one direction at a time.

Note. This includes ordinary transmit-receive operation, press-to-talk operation, voice-operated carrier and other forms of manual or automatic switching from transmit to receive.

SIMPLEX SUPERVISION.

Use of a simplex signaling channel for transmitting supervisory signals between two points in a connection.

SIMPLEX TELEGRAPHY.

Telegraphy employing simplex operation.

SIMPLEX-PHANTOM CIRCUIT.

Circuit formed by simplexing the repeating coils of a phantom circuit.

SIMPLEXED CIRCUIT.

Two-wire metallic circuit from which a simplex circuit is derived, the metallic and simplex circuits being capable of simultaneous use.

SIMULATION.

Process of introducing synthetic information into a computer for training and/or testing.

SIMULATION SUPERVISOR.

Noncommissioned officer in the Training and Battle Simulation Section of the SAGE Center, who supervises all functions of the section.

SIMULATOR.

Individual in the Training and Battle Simulation

Section of the SAGE Center, responsible for the insertion and control of simulated interceptor and non-interceptor tracks.

SIMULATIVE COMMUNICATIONS DECEPTION.

Classified definition. (Reference: AFM 100-50.)

SINE.

Sine of an angle is equal to the side opposite the angle divided by the hypotenuse (the long side opposite the right angle of a right angle triangle).

SINE GALVANOMETER.

Instrument resembling a tangent galvanometer except that its coil is in the plane of the deflecting needle. The sine of the angle of deflection is then proportional to the current.

SINE WAVE.

Wave in which the amplitude varies as the sine of the angle; the waveform of a normal alternating current or voltage.

SINGING.

Undesired self-sustained oscillation existing in a transmission system.

SINGING ARC.

DC electric arc that generates an af current and corresponding sound waves when a coil and capacitor are connected in parallel with the arc. This gives a musical tone. (Reference: DUDDEL ARC.)

SINGING MARGIN.

1. Difference between the working gain and the maximum gain (threshold of singing) of a repeater.
2. Excess of loss over gain around a possible singing path at any frequency, or the minimum value of such excess over a range of frequencies. (Reference: GAIN MARGIN.)

SINGING POINT.

1. Value of balance of a hybrid arrangement as determined by measurements with reference to a 1000-cycle testing signal.
2. Condition of a circuit or transmission path where the sum of the gains exceed the sum of

the losses. When expressed in db it is the gain that can be added to the circuit equivalent before singing will begin.

3. Amount of total gain in a transmission system (most commonly used in connection with two-wire repeaters) which causes the system to begin to lose efficiency of performance because the self-oscillating point is too closely approached.

4. Singing point of a circuit which is coupled back to itself is the point at which the gain is just sufficient to make the circuit break into oscillation.

SINGLE ADDRESS MESSAGE.

Single address message is one destined for only one addressee.

SINGLE OPERATION.

Operation of a telegraph system in only one direction at a time. (Reference: SIMPLEX OPERATION.)

Note. A distinction is sometimes made between single operation and simplex operation in applying single operation to Morse telegraphy and simplex operation to printing telegraphy. Another distinction is sometimes made in applying single operation to the operation of channels which may be worked in either direction at the will of the operators, and simplex operation to the operation of channels which are set up to carry signals in one direction only.

SINGLE PHASE.

Pertaining to a circuit or device that is energized by a single alternating voltage.

SINGLE SIDEBAND.

Portion of the radio frequency spectrum immediately adjacent to the carrier of a modulated transmitter.

SINGLE SIDEBAND MODULATION.

Modulation resulting from the partial or complete elimination of all components of one sideband of a carrier of an amplitude modulated wave.

SINGLE STROKE BELL.

Electric bell which produces a single stroke on its gong each time its mechanism is actuated.

SINGLE STUB TUNER.

Short section of transmission line terminated by a movable short-circuiting plunger. Used as an impedance matching device.

SINGLE-ADDRESS CODE.

(Reference: INSTRUCTION CODE.)

SINGLE-BREAK SWITCH.

Switch which opens the connected circuit at one point only.

SINGLE-BUTTON CARBON MICROPHONE.

Microphone having a carbon-filled button-like container on only one side of its flexible diaphragm. Movements of the diaphragm due to sound waves cause the resistance of the button to change, so that the microphone current constitutes the desired audio-frequency signal.

SINGLE-DIAL CONTROL.

Control of a number of different devices or circuits by means of a single adjustment, as in tuning all variable capacitor sections of a radio receiver for reception of a particular signal frequency by adjusting a single knob.

SINGLE-ENDED AMPLIFIER.

Amplifier in which each stage normally employs only one tube, or, if more than one tube is used, they are connected in parallel so that operation is asymmetric with respect to ground. (Reference: SINGLE-SIDED AMPLIFIER.)

SINGLE-ENDED TUBE.

Metal tube in which all electrode connections, including the control grid, are made to base pins, there being no top pin. The letter S after the first numerals in a receiving tube designation, as in 12SK7, indicates a single-ended tube.

SINGLE-HARMONIC DISTORTION.

Ratio of the power of the fundamental frequency, measured at the output of the transmission system considered, to the power of any signal harmonic observed at the output of the system because of its nonlinearity, when a single-frequency signal of specified power is applied to the input of the system; expressed in db.

SINGLE-HOP-PROPAGATION.

Process by which radio waves reach a distant receiving point by one refraction in the ionosphere.

SINGLE-MOTION STEPPING SWITCH.

Switch which steps its wipers in one direction (rotary) only. The rotary lineswitch is an example of the single-motion stepping switch.

SINGLE-OFFICE EXCHANGE.

Exchange served by a single central office.

SINGLE-PHASE CIRCUIT.

Either an alternating-current which has only two points of entry, or one which, having more than two points of entry, is intended to be so energized that the potential differences between all pairs of points of entry are either in phase or differ in phase by 180° . A single-phase circuit with only two points of entry is called a single-phase, two-wire circuit.

SINGLE-PHASE SYNCHRONOUS GENERATOR.

Generator which produces a single alternating electromotive force at its terminals. It delivers electric power which pulsates at double frequency.

SINGLE-POLARITY PULSE.

Pulse in which the sense of the departure from normal is in one direction only.

SINGLE-POLE SWITCH.

Switch having only one movable contact element. It may be arranged for single-throw or double-throw operation or may employ a rotating arm as in a single-gang selector switch.

SINGLE-SHOT BLOCKING OSCILLATOR.

Blocking oscillator modified to operate as a single-shot trigger circuit.

SINGLE-SHOT MULTIVIBRATOR (SINGLE TRIP MULTIVIBRATOR).

Multivibrator modified to operate as a single-shot trigger circuit.

SINGLE-SHOT TRIGGER CIRCUIT.

Trigger circuit in which a triggering pulse initiates one complete cycle of conditions ending with a stable condition. (Reference: SINGLE-TRIP TRIGGER CIRCUIT.)

SINGLE-SIDEBAND MODULATION.

Varying the amplitude, phase, or frequency of a single side-band transmission carrier wave.

SINGLE-SIDEBAND SYSTEM.

Type of radiotelephone service in which one set of sidebands (either the upper or lower) is completely suppressed and the transmitted carrier is partly suppressed.

SINGLE-SIDEBAND TRANSMISSION.

Method of communication in which the frequencies produced by the process of modulation on one side of the carrier are transmitted and those on the other side are suppressed. The carrier frequency may be either transmitted or suppressed.

SINGLE-SIDEBAND TRANSMITTER.

Transmitter in which one side-band is transmitted and the other is effectively eliminated.

SINGLE-SIDED AMPLIFIER.

Amplifier in which each stage normally employs only one tube or, if more than one tube is used, they are connected in parallel so that operation is asymmetric with respect to ground. (Reference: SINGLE-ENDED AMPLIFIER.)

SINGLE-SIGNAL RECEIVER.

Superheterodyne receiver equipped for single-signal reception, with the crystal filter usually located in the intermediate-frequency amplifier and arranged so that the crystal can be shorted out by a switch when high selectivity is not needed.

SINGLE-SIGNAL RECEPTION.

Reception involving the use of a piezoelectric quartz crystal and associated coupling circuits as a crystal filter to provide a high degree of selectivity as required for reception of a single station in a crowded communication band.

SINGLE-THROW CIRCUIT BREAKER.

Circuit breaker by means of which the circuit can be closed or opened by moving one set of contacts only.

SINGLE-THROW SWITCH.

Switch by means of which the circuit can be closed or opened by moving the switch blade into or out of one set of contacts only.

SINGLE-TONE KEYING.

Form of keying in which the modulating wave causes the carrier to be modulated with a single tone for one condition, which may be either ing or spacing, and the carrier is unmodulated for the other condition.

SINGLE-TRIP TRIGGER CIRCUIT.

Trigger circuit in which a triggering pulse initiates one complete cycle of conditions ending with a stable condition. (Reference: SINGLE-SHOT TRIGGER CIRCUIT.)

SINGLE-TUNED AMPLIFIER.

Single-tuned amplifier is an amplifier characterized by resonance at a single frequency.

SINGLE-TUNED CIRCUIT.

Circuit which may be represented by a single inductance and a single capacitance, together with associated resistances.

SINGLE-VOLTAGE RATING OF A TRANSFORMER.

Rating applied to a transformer that has two separate windings (primary and secondary) with only one voltage rating assigned to each.

SINGLE-WINDING MULTISPEED MOTOR.

Type of multispeed motor having a single winding capable of reconnection in two or more pole groupings.

SINGLE-WIRE LINE.

Transmission line that utilizes the ground as one side of the circuit.

SINK.

1. Device which drains off energy from a system.
2. Place where energy from several sources is collected or drained away.
3. Power-consuming device, such as the load in a circuit.

SINS.

Term used to designate a self-contained inertial marine navigation system which is especially applicable to submarine use.

SINUSOIDAL.

Varying in proportion to the sine of an angle or time function. Ordinary alternating current is sinusoidal.

SINUSOIDAL CURRENT.

Symmetrical alternating current the instantaneous values of which are equal to the products of a constant, and the sine or cosine of an angle having values varying linearly with time. Thus: $i = I_m \sin (w t \pm a)$ or $i = I_m \cos (w t \pm a)$ where I_m is the maximum value of the current.

(Reference: SIMPLE SINUSOIDAL CURRENT and SIMPLE HARMONIC CURRENT.)

SINUSOIDAL FIELD.

Field in which the magnitude of the quantity at any point varies as the sine or cosine or an independent variable, such as time, displacement, or temperature.

SINUSOIDAL QUANTITY.

Quantity which is the product of a constant and the sine or cosine of an angle having values varying linearly with the values of the independent variable. Thus: $y = A \sin (wx \pm a)$ and $y = A \cos (w x \pm a)$ are simple sinusoidal quantities, where A , w and a are constants.

Note. Any quantity that can be represented by a sine function can also be represented by a cosine function. (Reference: SIMPLE SINUSOIDAL QUANTITY and SIMPLE HARMONIC QUANTITY.)

SINUSOIDAL WAVE.

Wave, the displacement of which varies as the sine (or cosine) of an angle that is proportional to time or distance, or both.

SIPHON RECORDER.

Telegraph recorder comprised of a sensitive moving coil galvanometer with a siphon pen that is directed by the moving coil across a traveling strip of paper.

SITE.

Geographical location of an air defense Direction Center, radar station, radio station, etc.

SITING.

Proper location of an antenna to obtain optimum performance.

SITUATION DISPLAY.

Presentation in tabular and vector-message format formed by various combinations of 64 numbers and symbols on the face of a situation-display tube.

SITUATION DISPLAY CATEGORY SWITCHES.

Bank of 15 toggle switches on the left of a situation-display console, in a SAGE Center. These switches control the type of display that can appear on the situation-display tube.

SITUATION DISPLAY CONSOLE.

Cabinet in the SAGE center, containing a large situation-display tube, various feature and category-selection switches, and communications facilities which enable an operator to perform specified air-defense duties. It usually contains a digital-information display tube.

SITUATION DISPLAY TUBE.

Large cathode-ray tube used to display tabular and vector messages pertinent to the various functions of the air-defense mission.

SITUATION MAP.

Map showing the tactical or administrative situation at a particular time, used for staff study or as an addition to staff reports.

SIX-PHASE CIRCUIT.

Combination of circuits energized by alternating electromotive forces which differ in phase by $1/6$ of a cycle (60°).

Note. In practice, the phases may vary several degrees from the specified angle.

SKREW.

Deviation of the received image on the facsimile record sheet from a rectangular shape due to errors in synchronism between the scanner and the recorder. Skew is usually expressed in the number of inches per copy. The usual limitation is about $1/8$ -inch in a 12-inch copy.

SKIATRON.

Cathode-ray tube with a screen composed of a halide of sodium or potassium. The screen normally is nearly white, and wherever the electron beam strikes, it turns a magenta color which is

of long persistence. The screen can be illuminated by a strong light source so that the reflected image may be made intense enough to be protected. (Reference: DARK TRACE TUBE.

SKIN EFFECT.

1. Tendency of hf currents to flow near the surface of a conductor thus being restricted to a small part of the total sectional area and producing the effect of increasing the resistance. (Reference: RADIO FREQUENCY RESISTANCE.)
2. The tendency of alternating currents to flow near the surface of a conductor, thus being restricted to a small part of the total cross-sectional area. This effect increases the resistance and becomes more marked as the frequency rises.
3. Concentration of current density on the surface of a conductor. It is caused by a counterelectromotive force self-induced by an alternating current passing through the conductor. Increases with frequency.

SKIN EFFECT IN A CONDUCTOR.

Phenomenon of nonuniform current distribution over the cross section of a conductor caused by the variation of the current in the conductor itself.

SKINNER.

Wire brought out at the end of a cable prepared for soldering to a terminal.

SKINNING.

Process of removing insulation from wire.

SKIP DISTANCE.

1. Minimum distance at which radio waves of a specified frequency can be transmitted at a specified time between two points on the earth by reflection from the regular ionized layers of the ionosphere. Reflected waves are received at smaller distances only by scattered or zig-zag reflections.
2. Minimum distance between the transmitting station and the point of return to the earth of the transmitted wave reflected from the ionosphere.

SKIP KEYING.

Reduction of radar prf to a sub-multiple of that normally used, in order to reduce mutual interference between radars or to increase the length of radar time base.

SKIP TONE.

Space or region within the transmission range wherein signals from a transmitter are not received. It is the distance between the farthest point reached by the ground wave and nearest point at which the refracted sky waves come back to earth.

SKIP ZONE.

Distance from the point of radiation to the point where the radio wave first returns to earth due to refraction, with a given frequency transmitted at an angle less than the critical angle.

SKITRON.

Color trace tube for projecting purposes.

SKY WAVE.

Radio wave that reaches the receiving location after reflection from the ionosphere.

SKY WAVE CORRECTION.

Amount of time to be added or subtracted from the indicated time difference to reduce a sky wave observation to the corresponding observation for the ground wave "line of position". Amount of correction required is indicated on the Loran chart.

SKY WAVE SYNCHRONIZATION LORAN.

Loran System in which the range is extended by using ionosphere-reflected signals for synchronizing the two ground stations.

SKY WAVE TRANSMISSION DELAY.

Amount by which the time of transmit from transmitter to receiver of a pulse carried by sky waves reflected once from the E-layer exceeds the time of transit of the same pulse carried by ground waves.

SKY WAVES.

Radio waves which travel up into the sky from the transmitting antenna and are bent back to earth by the ionosphere.

SKYLINE GRAPH.

Presentation which shows the screening angles for the full 360° about a radar antenna. It includes a plotted graph (derived from map-studies transit measurements) and a panoramic photograph, both having the same azimuth scale.

SL (SENDING LEAD, LOOP, CIRCUIT).**SLAB, CRYSTAL.**

Relatively thick cut from which blanks are to be obtained by subsequent transverse cutting.

SLANT RANGE.

Distance in a straight line from a gun, point of observation, or radar set to a target, especially an aerial target.

SLAVE STATION.

Station of a synchronized group whose emissions are controlled by a master station.

SLC (SEARCHLIGHT CONTROL).**slc (STRAIGHT-LINE CAPACITANCE).**

Variable capacitor characteristic obtained when the motor plates are so shaped that the capacitance varies directly in proportion to the angle of rotation.

SLEETPROOF.

So constructed or protected that the accumulation of sleet will not interfere with its successful operation.

SLEEVE.

1. Lead tube placed over spliced conductors in a cable.
2. Third wire associated with a pair which connects to the tubular part of a jack or cylindrical part of a plug.
3. Tube of woven cotton (cotton sleeves) pushed over a twisted wire joint in cable conductors.
4. Brass or copper tube or paired tubes used to fasten line or drop wires together by twisting, crimping, or rolling.
5. Tube of copper or iron pushed over a relay winding to make it slow acting.

6. Sleeve of a plug is a cylindrically shaped contracting part, usually placed immediately back of the ring.

7. Short tubular metal for joining wires.

SLEEVE COMPRESSOR.

Tool used for splicing wire.

SLEEVE ROLLER.

Tool used for splicing wire.

SLEEVE STUB ANTENNA.

Antenna consisting of half of a sleeve-dipole antenna projecting from an extended conducting surface.

SLEEVE SUPERVISION.

Use of the sleeve circuit for transmitting supervisory signals.

SLEEVE WIRE.

1. Third conductor when associated with a pair.
2. Wire which connects to the sleeve of a plug or jack.

Note. By extension, it is common practice to designate by this term the conductors having similar functions or arrangements in circuits where plugs or jacks may not be involved.

SLEEVE-DIPOLE ANTENNA.

Dipole antenna surrounded in its central portion by a coaxial sleeve.

SLEWING MOTOR.

Motor used in gun directors and in radio detecting and ranging equipment to move the aiming device rapidly in a horizontal or vertical direction or both when picking up and tracking a target.

slf (STRAIGHT-LINE FREQUENCY).

Variable capacitor characteristic obtained when the motor plates are so shaped that the resonant frequency of the tuned circuit containing the capacitor varies directly in proportion to the angle of rotation.

SLICE.

To remove those parts of a wave form-lying outside two given amplitude limits on the same side of the zero axis.

SLICER.

Circuit which effectively amplifies a portion of the incoming pulses lying between two closely spaced amplitude levels.

SLIDE FREQUENCY.

One of the frequencies of a sideband.

SLIDE WIRE.

Bare length of resistance wire used as a continuously variable resistance by means of a slider arrangement that can be set to any point along the length of the wire.

SLIDE-BACK VOLTMETER.

Vacuum-tube voltmeter that measures effective voltage values indirectly by measuring the change in grid bias voltage required to restore the plate current of the vacuum tube to the value it had before the unknown voltage was applied to the grid circuit.

SLIDE-RULE DIAL.

Radio receiver tuning dial in which a pointer moves in a straight line over long straight scales, resembling the scales of a slide rule.

SLIDE-WIRE BRIDGE.

Simplified form of Wheatstone bridge in which the position of a slider on a resistance wire determines the resistance ratio.

SLIDE-WIRE RHEOSTAT.

Rheostat constructed in the form of a long single-layer coil of resistance wire, with a sliding contact that can be moved to any desired position on the coil in order to vary the resistance.

SLIDER.

Sliding type of movable contact.

SLIDING CONTACTS.

Relay or switch contacts that close with a sliding motion giving a self-cleaning action.

SLIP.

Method of interconnecting multiple wiring between switching units by which trunk No. 1 becomes the first choice for the first switch, trunk No. 2 first choice for the second switch, trunk No. 3 first choice for the third switch and so forth.

SLIP.

Distortion produced in the recorded image which is similar to that produced by skew but is caused by slippage in the mechanical drive system.

SLIP.

Difference between a motor's synchronous speed and its operating speed. It may be expressed in the following ways:

1. As a per cent of synchronous speed.
2. As a decimal fraction of synchronous speed.
3. Directly in revolutions per minute.

SLIP COATING.

Chemical film applied to chaff dipoles to reduce clumping together (birdnesting) of the dipoles.

SLIP RING.

Device for making electrical connections between stationary and rotating contacts.

SLOE (SPECIAL LIST OF EQUIPMENT).

Air Force publication which establishes interim equipment allowances pending inclusion of such equipment in appropriate authorization documents.

SLOPE.

The essentially linear portion of the grid-voltage plate-current characteristic curve of a vacuum tube, on which the operating point is chosen when linear amplification is desired.

SLOPE ANGLE.

Direction of a flight path expressed as an angle projected in the vertical plane.

SLOPE DEVIATION.

Difference between the projection in the vertical plane of the actual path of movement of an aircraft and the planned slope for the aircraft expressed in terms of either angular or linear measurement.

SLOT.

One of the grooves formed in the iron core of a motor or generator armature for the conductors forming the armature winding.

SLOT ANTENNA.

Radiating element formed by a slot in a conducting surface.

SLOT COUPLING.

Method of transferring energy between a coaxial cable and a waveguide by means of two coincident narrow slots, one in the sheath of the guide and the other in the sheath of the coaxial cable. If the cable and guide are parallel to each other, E-waves are launched into the guide. If perpendicular to each other, H-waves are launched into the guide.

SLOT RADIATOR.

Primary radiating element in the form of a slot cut in the walls of a metal waveguide-or-cavity resonator or in a metal plate.

SLOTTED ROTOR PLATE.

Rotor plate having radial slots to permit bending different sections of the plate either inward or outward to adjust the total capacitance of a variable capacitor section during alignment. (Reference: SERRATED ROTOR PLATE.)

SLOTTED SECTION.

Length of waveguide in the wall of which is cut a non-radiating slot used for measuring purposes.

SLOW-ACTION RELAY.

Relay which is designed to be sluggish in action so as not to break or make as a result of a short interruption of current.

SLOW-OPERATING RELAY.

Slow-acting relay which delays its operation momentarily after its operating circuit is completed. Often abbreviated SO on circuit diagrams.

SLOW-RELEASE RELAY.

Time-delay relay in which there is an appreciable delay between deenergizing of the coil and release of the armature.

SLOWED-DOWN VIDEO.

Technique or method of transmitting radar data over narrow-band width circuits. The procedure involves storing of the radar video over the time required for the antenna to move through one beamwidth, and the subsequent sampling of this

stored video at some periodic rate such that all of the range intervals of interest are sampled at least once each beamwidth or per azimuth quantum. The radar returns are quantized by use of AN/FST-1 equipment at a gap-filler radar site.

SLR (SINGLE LINE REPEATED).**SLUG.**

1. Heavy metal ring or short-circuited winding which is used on the core of a relay to introduce a time delay in its operation.
2. Metallic core which is moved along the axis of a coil for the purpose of tuning.

SLUG TUNING.

Means of varying the frequency of a resonant circuit by introducing a slug of material into either the electric or magnetic fields or both.

slw (STRAIGHT-LINE WAVELENGTH).

Variable capacitor characteristic obtained when the motor plates are so shaped that the wave length of resonance in the tuned circuit containing the capacitor vanes directly in proportion to the angle of rotation.

SMC (SUBMARINE CABLE).

Cable designed for service under water. Usually a lead-covered cable with a steel armor applied between layers of jute.

SMAMA (SARAMENTO AIR MATERIAL AREA).

Air materiel area with headquarters at Sacramento, California.

SMARN.

Fire control radar for all weather, long-range fighter aircraft.

SMEE CELL.

Primary cell having electrodes of zinc and platinized silver in dilute sulphuric acid. Now obsolete.

SMOKE DEPOSITION.

Electrostatic precipitation of smoke at chimney tops, involving charging of solid particles by a high-voltage discharge so that the particles are attracted to charged electrodes and thereby collected.

SMOKE DETECTOR.

Photoelectric system for actuating an alarm when smoke in a chimney exceeds a predetermined density.

SMOKE PUFF DECOY.

Type of pyrotechnic countermeasure against infrared devices.

SMOKY QUARTZ.

Quartz with a pale smoky brown to almost black color.

SMOOTHING CHOKE.

Iron-core choke coil employed as a filter to remove fluctuations in the output current of a vacuum-tube rectifier or direct-current generator.

SMOOTHING CIRCUIT.

Combination of inductance and capacitance employed as a filter circuit to remove fluctuations in the output current of vacuum-tube rectifier or direct-current generator.

SMOOTHING FACTOR.

Factor expressing the effectiveness of a filter in smoothing ripple-voltage variations.

SMOOTHING FILTER.

Filter used to remove fluctuations in the output current of a vacuum-tube rectifier or direct-current generator.

SMOOTHING TIME.

Time interval essential to the computer of a fire control radar mechanism to smooth the incoming data so that accurate fire may result.

SN (SECRETARY OF THE NAVY).

Civilian head of the Department of the Navy.

SNAKE.

Tempered steel wire, usually of rectangular cross section, which is pushed through a run of conduit, or through an inaccessible space, such as a partition, and used for drawing in the wires. (Reference: FISHING WIRE.)

SNAP MAGNET.

Permanent magnet used in thermostatic, pressure, and other types of control instruments to provide quick make-and-break action at the contact and

thereby minimize sparking. The magnet pulls the armature in suddenly against spring action to close the contacts, and holds, the contacts closed until spring action is enough to make them fly apart.

SNAP SWITCH.

Switch in which the contacts are separated or brought together suddenly by the action of a spring placed under tension or compression by the operating knob or lever.

SNARK.

Strategic intercontinental guided missile or pilotless bomber system developed for the Air Force. It has highly swept wings and is powered by a turbojet engine. It cruises at subsonic speeds. The nomenclature is SM-62. It is 32 feet long and has a body diameter of 4.5 feet and a wing span of about 30 feet. The missile will attain a speed of approximately .9 Mach and an altitude comparable to that of jet aircraft. It navigates by a combination of celestial and inertial guidance, and is designed to carry a nuclear warhead. Terminal guidance is inertial. A reconnaissance model of this missile is designated the RSM-62.

SNEAK CURRENT.

1. Current which, while not particularly excessive, is above the carrying capacity of the equipment through which it flows.
2. Leakage current that gets into telephone circuits from other circuits. It is too weak to cause immediate damage, but can produce harmful heating effects if allowed to continue.

SNELL's LAW.

Law relating the angle of incidence reflection, and refraction for a wave in a medium that is incident upon the surface separating that medium from another.

SNELL'S LAW OF REFRACTION.

States that the sine of the angle of incidence divided by the sine of the angle of refraction equals a constant called the index of refraction when one of the media is air. The index of refraction can also be explained as the ratio of

the velocity of light in one medium to that in another. For air-glass this ratio is approximately 1.5 to 1.7. (Reference: REFRACTION.)

SNIPPER.

Airborne radar for bomb-release, AN/APG-4. It is a 73-om frequency-modulated radar system designed for automatic bomb release at altitudes from 40 to 400 feet, and relative lane-target speeds of 100 to 350 knots. Early models required the pilot to fly at one of six altitudes preset in the equipment. Later models permit evasive action, and altitude correction is obtained automatically from the AN/APN-1 altimeter. However, the plane must be in level flight when the release point is reached. The AN/APG-4 is intended for use on semi-isolated targets over water. It can also be used for skip bombing.

SNL (STANDARD NOMENCLATURE LIST).

List of the official Air Force names of items of equipment.

SNOW.

Speckles background caused by random noise on an intensity-modulated cathode-ray tube display.

So (SOUTH, SOUTHERN).

1. Canlinal point directly opposite the north.
2. Situated at the south, or in a southern direction.
3. The abbreviation So can be used in combinations only as in SOAPD: Southern Air Procurement District.

SOCKET ADAPTER.

Device placed between a tube socket and a tube, to permit use of the tube in a socket designed for some other type base, or to permit current or voltage measurements at electrodes while the tube is in use.

SOCKET ANTENNA.

Simple device that plugs into a wall outlet and provides a connection through a capacitor to the power line for use as the antenna for a radio receiver.

SOCS. SAC Operational Control System.**SODAR.**

New device which detects large changes in temperature overhead by the fact that the amount of sound returned is increased several times in volume when hot and cold air are intermingling violently. The device launches vertical upward from the ground a sound of low power that is in range of human hearing. The echoes are received and changed into oscilloscope patterns that can be viewed visually.

SODIUM.

Metallic alkali element, used on cathodes of phototubes when maximum response is desired at the violet end of the visible spectrum.

SODIUM-VAPOR LAMP.

Gas discharge lamp containing sodium vapor, used chiefly for highway illumination.

SOFAR.

Underwater sound system developed by the Navy in co-operation with Woods Hole Oceanographic Institution, which makes it possible to locate air and ship survivors far at sea. The system utilizes a TNT charge dropped underwater by the survivor and timed to explode at a depth of 3,000 to 4,000 feet, which sets up underwater sound waves that are picked up by hydrophones at shore stations. Survivors can be located within a square mile of sea as far as 2,000 miles from shore.

SOFT INCLUSIONS.

Term applied in the grading of quartz crystals to feathery or fern-like types of foreign inclusions.

SOFT PHOTOTUBE.

Gas phototube.

SOFT TUBE.

1. High-vacuum tube which has become defective because of the entry of a small amount of gas.
2. An electronic tube into which a small amount of gas has purposely been put in order to obtain desired characteristics. A gaseous tube.

SOFT X-RAYS.

X-rays having comparatively long wave lengths and poor penetrating power.

SOI (SIGNAL OPERATION INSTRUCTIONS).

Series of orders issued for technical control and coordination of the signal communication activities of a command.

SOLAR CONSTANT.

Amount of energy arriving per unit area exposed to unobstructed solar rays at the mean radius of the Earth's orbit around the sun. Important when calculating the energy input to a space vehicle for cooling purposes or from the standpoint of using a solar engine.

SOLAR CORONA.

Outer atmospheric shell of the sun, divided into the F corona and the K corona.

SOLAR CORPUSCLES.

Particles, usually protons, sprayed out into the solar system by disturbances on the sun. If the earth intercepts one of these sprays the particles tangle with the earth's magnetic field and produce ionospheric disturbances.

SOLAR ENERGY.

Energy radiated by the sun.

SOLAR FLARE.

Catastrophic solar phenomenon which gives rise to intense ultraviolet and corpuscular emission from the associated region of the sun. It affects the structure of the ionosphere and interferes with communications and the control of space vehicles.

SOLAR NOISE.

Electromagnetic radiation which radiates from the atmosphere of the sun at radio frequencies.

SOLAR RADIATION.

Energy output of the sun—largely light and heat.

SOLAR SYSTEM.

Sun and its family of planets and their satellites.

SOLDER.

Alloy of lead and tin that melts at a fairly low temperature, used in making electrical connections.

HARD. Alloy of lead and a large portion of tin.

ROSIN CORE. Solder in tubular form, the center filled with rosin and, therefore, self fluxing.

SOFT. Solder with a high lead content.

SOLDERED JOINT.

Joint, already electrically good, which is made mechanically more secure and corrosion free with solder.

SOLDERING.

Act of joining two pieces of metal with a third metal of lower melting point.

SOLDERING IRON.

Tool used to apply heat to a joint preparatory to soldering.

SOLDERLESS CONNECTOR.

Device for clamping two wires firmly together to provide a good connection without solder. A common form is a cap with tapered internal threads, twisted over the exposed ends of the wires.

SOLENOID.

1. Electromagnet having an energizing coil which is approximately cylindrical in form, acting on an armature positioned in the center of the coil.

2. Electric conductor wound as a helix with a small pitch, or as two or more coaxial helices.

3. Tubular coil of wire which, traversed by an electric current, acts as a magnet and tends to pull a movable iron core to a central position.

SOLID CONDUCTOR.

Conductor consisting of a single wire.

SOLID FUEL.

Substance used to propel rockets.

SOLOMAN'S UNIT.

French unit of X-ray quantity, having a value of about 2.29 roentgens.

SONAR.

General name for sonic and ultra-sonic underwater ranging, sound, and communications system. Actually, a device which radiates underwater

sound pulses and utilizes reflection of these pulses from distant objects to determine their existence or position. The name is derived from the initial letters of the expression "Sound Navigation and Ranging".

SONAR-SIGNALING SUPERSONIC TELEGRAPH.

Process of transmitting and receiving morse signals by sonar apparatus.

SONE.

Unit of loudness; a simple tone of 1000 cps, 40 db. above a listener's threshold, produces a loudness of one sone. The loudness of any sound that is judged by the listener to be n times that of one-sone tone is n sones. The millisone (0.001 sone) is often used.

SONIC.

Pertaining to or utilizing sound waves.

SONIC ALTIMETER.

Instrument for determining the height of an aircraft above the earth by measuring the time taken for sound waves to travel from the aircraft again. The method is based on sound having a known velocity of 1,080 feet per second through dry air at 0°C (32°F.)

SONIC DEPTH FINDER.

Instrument for determining the depth of water. Sound waves produced by a reproducer or transmitter on the hull of a vessel travel to the bottom and are reflected back to a special sound receiver that measures the interval of time between sending of the signal and receipt of its echo. From this, the depth is readily calculated or sometimes indicated directly by the instrument on the basis that sound waves travel through water at a velocity of 4,800 feet per second.

SONIC FREQUENCIES.

Sound or audio frequencies, hence frequencies in the approximate range of 20 to 20,000 cycles.

SONNE.

Radio navigational system developed by Germany. It is a modification of the German-developed ELE TRA system which was essentially

a multiple radio range providing a large number of equisignal zones and using a simple three-tower antenna system. The SONNE modification consisted of linearly varying the radio frequency phases of two of the three antennas, after a starting signal. This caused each of the equisignal zones to rotate about the transmitter as a center until, after 60 seconds, each came to occupy the initial position of its next neighbor. Since deviations from the equisignal zones were detected by hearing dots on one side and dashes on the other, the position relative to an equisignal zone could be determined by counting the dots and the dashes received during the 60 minute cycle and examining their time relationship to the equisignal. If the equisignal zones were properly identified a line of position could be plotted. A similar line of position obtained from another station would establish a fix. Reliable range for this system in the 300-kc frequency region is six to eight hundred miles.

SONOBUOY.

Submarine detecting device used to locate a submerged target. By means of a hydrophone system in the water, a Sonobuoy detects the noises produced by escaping submarines, converts them to radio signals, and transmits them to a receiver in an airplane. Each Sonobuoy transmits on one of several possible frequencies; and, then dropped in a pattern, each will normally operate on a different frequency. The receiver in the airplane has a channel selector that enables the operator to switch from one frequency to another and obtain a rapid evaluation of several buoys. Each Sonobuoy is additionally equipped with a radar beacon, which serves as an aid to the airman in locating the buoy or buoys that are providing submarine indications. The air radar will detect the beacon on the particular buoy to which the Sonobuoy receiver is tuned, and the pilot may then home by radar to that position.

SONOMETER.

A frequency meter depending on mechanical resonance with the vibrations of a variable length of a stretched wire.

SOP (STANDING OPERATING PROCEDURE).

Approved and fixed method of procedure for accomplishing a task.

SOP (SOUTH PACIFIC REGION).

South Atlantic territory, defined for administrative reasons.

SOPA (SENIOR OFFICER PRESENT AFLOAT).

Officer present on board a sailing vessel, senior to others by rank or date of rank, or of field grade or higher.

SOPHISTICATED.

Refers to a piece of equipment, or a system which is complex and intricate, or requiring special skills to operate.

SORTIE.

1. Sudden attack made from a defensive position. In this meaning it is sometimes called a salley.
2. An aircraft airborne on a mission against the enemy or in direct support of such a mission.
3. In naval usage, to depart from a port or anchorage, with an implication of departure for operations or maneuver.

SOS.

Distress signal used in radiotelegraphy.

SOUND.

1. Alternation in pressure, particle displacement, or particle velocity propagated in an elastic material or the super-position of such propagated alternations.

2. The sensation produced through the ear by the alternations described above.

Note. In case of possible confusion, the term sound wave may be used for definitional, and the term sound sensation for definition 2.

SOUND ANALYZER.

Electronic apparatus for measuring sound levels and analyzing the frequency components that make up a sound. In one form it consists of a microphone, an amplifier, and a frequency analyzer having an arrangement of tuned circuits that

permits measuring each component or harmonic separately.

SOUND ARTICULATION.

Percentage of the total number of spoken fundamental sounds which are correctly recognized when the sounds are spoken in meaningless syllables.

SOUND ENERGY DENSITY.

Sound energy per unit volume. The unit is the erg per cubic centimeter.

SOUND ENERGY FLUX.

Average over one period of the rate of flow of sound energy through any specified area. The unit is the erg per second.

SOUND ENERGY FLUX DENSITY.

(Reference: SOUND INTENSITY.)

SOUND FILM.

Movie film having a sound track at one side of the picture frames, for simultaneous reproduction of the sounds that are to accompany the film. A beam of light projected through the sound track is modulated at an af rate by the variations in the width or density of the track, and these modulations are converted into af signals by a phototube.

SOUND GATE.

Mechanical device through which film passes in a sound-film projector for conversion of the sound track into af signals that can be amplified and reproduced. In a television camera for pickups, a sound gate is used to obtain the sound accompaniment for the movie being televised. An exciter lamp, lens assembly, and phototube are associated with the sound gate.

SOUND GUN.

This weapon was in the laboratory stage and under development by the Germans at the end of the war. It could kill a man by blast, or pressure effect at 180 feet and disable him at 300 yards.

SOUND INTENSITY.

Sound energy transmitted, per unit of time in a specified direction, through a unit area normal

to this direction. The unit is the erg per second per square centimeter but sound intensity may also be expressed in watts per square centimeter.

SOUND LEVEL METER.

Electronic instrument for measuring sound intensities. Its output meter may be calibrated in decibels or directly in units of sound intensity.

SOUND PANEL.

1. Movable panel of sound-absorbing material used in a broadcast studio to prevent sound reflections.
2. Hard-surfaced panel used to obtain reflections.

SOUND PICTURES.

Motion picture which is accompanied by a simultaneous reproduction of the sound normally associated with the action.

SOUND POWERED TELEPHONE SET.

Telephone set in which the operating power is derived from the speech input only.

SOUND PRESSURE.

Root-mean-square value of the instantaneous sound pressure at a point over a complete cycle. The unit is the dyne per square centimeter. (Reference: EFFECTIVE SOUND PRESSURE.)

SOUND SIGNALING.

Means of communication which utilizes sound waves. Whistles, sirens, bells, and signal devices are used to transmit sound messages consisting of prearranged signals. Sound may also be used for emergency communication using international morse code.

SOUND TRACK.

Part of a sound movie film containing the variable width or variable density pattern representing the sound accompaniment of the film.

SOUND WAVE.

Traveling wave produced by vibrations in an elastic medium at a rate that can be heard.

SOUND-ON-DISK RECORDING.

Sound recording on conventional phonograph records.

SOUND-POWERED TELEPHONE.

Telephone system energized by the sound waves of the voice, with no external power supply. The current impulses are generated in the circuit by the action of the sound waves on the microphone.

SOUNDER.

Telegraph receiving instrument in which an electromagnet attracts an armature each time a pulse arrives. The armature makes an audible sound as it hits against its stops at the beginning and end of each current impulse, and the intervals between these sounds are translated from code into the received message by the operator.

SOUNDING.

Determination of the depth of water or the altitude above the earth by any of several methods.

SOUNDING ROCKET.

High-altitude rocket carrying air-sounding equipment.

SOUNDPHOTO.

Equipment used for transmission of facsimile on a wire line circuit. A registered trade mark of International News Photos.

SOURCE IMPEDANCE.

Impedance presented by a source of energy to the input terminals of a device.

SOUTH.

1. Cardinal point directly opposite the north.
2. Situated at the south, or in a southern direction.

SOUTH POLE.

Pole of a magnet at which magnetic lines of force are assumed to enter. They emerge from the north pole.

SPACE.

1. In telegraphy, the signal condition opposite to mark.
2. In simple telegraphy, the "line open" condition.
3. (Reference: FREE SPACE, MARK AND SPACE IMPULSES.)

SPACE ATTENUATION.

Loss of energy expressed in decibels, of a signal in free space; caused by such factors as absorption, reflection, scattering, and dispersion.

SPACE CHARGE.

1. Negative charge due to the cloud of electrons existing in the space between the cathode and plate in a vacuum tube, formed by the electrons emitted from the cathode in excess of those immediately attracted to the plate.

2. Charge of electricity distributed throughout a volume or space, as the space near the cathode of a vacuum tube or phototube.

SPACE COORDINATES.

Three dimensional system of rectangular coordinates in which the x and y coordinates lie in a reference plane tangent to the earth at a selected point and the z coordinate is perpendicular to that plane.

SPACE CURRENT.

Total current flowing between the cathode and all other electrodes in a tube. This includes the plate current, grid current, screen grid current, and any other electrode current which may be present.

SPACE DIVERSITY.

Method of transmission and/or reception used to minimize the effects of flat fading. It is usually accomplished by multiple antennas physically separated.

SPACE DIVERSITY RECEPTION.

Form of diversity reception which utilizes receiving antennas placed in different locations.

SPACE FACTOR.

1. Ratio of the cross-sectional area of the conducting portion of an insulated conductor to the total cross-sectional area occupied by it.

2. Ratio of the space occupied by iron to the total cubic content of an iron core.

SPACE GROUP.

Group of points in space which has one of the types of symmetry exhibited by crystals.

SPACE IMPULSE.

In neutral operation the term mark impulse refers to the closed circuit signal and the term space impulse refers to the open circuit signal. In other than neutral operation, the term mark impulse is applied to the circuit condition which produces the same result in the terminal equipment that a mark impulse produces in neutral operation. Similarly, the term space impulse is applied to the circuit condition which produces the same result in the terminal equipment that a space impulse produces in neutral operation.

SPACE MEDICINE.

Study of the effect of space flight on human beings.

SPACE PERMEABILITY.

Factor that expresses the ratio of magnetic flux density to magnetizing force in a vacuum. In the centimeter-gram-second electromagnetic system of units, the permeability of a vacuum is arbitrarily taken as unity.

SPACE PHASE.

Reaching corresponding peak values at the same point in space.

SPACE PULSE.

One of two components which make up the Bell system code. Condition of zero current in a teletypewriter.

SPACE QUADRATURE.

Difference in the position of corresponding points of a wave in space by a distance equal to one-quarter of the wave length in question.

SPACE RADIO.

Art of communication by means of radio waves in free space.

SPACE STATION.

Large, manned artificial satellite in orbit.

SPACE WAVE.

Radiated energy consisting of the direct and ground waves.

SPACE-CHARGE EFFECT.

Repulsion of electrons emitted from the cathode

of a thermionic vacuum tube by electrons accumulated in the space charge near the cathode.

SPACE-CHARGE GRID.

Grid operated at a low positive potential and placed between the cathode and control grid of a vacuum tube to produce a high transconductance.

SPACE-CHARGE GRID TUBE.

Tube using a space-charge grid. (Reference: SPACE-CHARGE GRID.)

SPACED ANTENNA.

Antenna system consisting of a number of separate antennas spaced a considerable distance apart, used to minimize local effects of fading at short-wave receiving stations.

SPACED-ANTENNA DIRECTION FINDER.

Direction finder comprising of two or more similar separate antennas spaced apart and coupled to a common receiver.

SPACED-LOOP DIRECTION FINDER.

Spaced antenna direction finder in which the individual antennas are loops.

SPACING CONTACT.

Contact of a telegraph relay which is closed when a spacing impulse is controlling the relay operation.

SPACING IMPULSE.

Magnitude and polarity of a current in a line when the receiving equipment is in the unoperated or released position.

SPACING INTERVAL.

Interval between successive telegraph signal pulses, during which there is no current flow or the current is of the polarity opposite to that used for the signal pulses.

SPACING PULSE.

In teletypewriter operation, the signal interval during which the selector unit is unoperated.

SPACING WAVE.

Emission that takes place between the active portions of the code characters or while no code characters are being transmitted.

SPACE TIPS.

Notched flat metal strips connected to cord or wire ends to permit them to be held under binding screws.

SPADE TUNING.

Rough method of tuning a circuit, involving moving a spade-shaped flat piece of metal over the face of a spider web or other flat coil to change the inductance.

SPAGHETTI.

Heavily varnished cloth tubing sometimes used to provide additional insulation for radio circuit wiring.

SPAN.

Part of any conductor, cable, suspension strand, or pole line between two consecutive points of support or the space between two such consecutive points of support.

SPAN LENGTH.

Predetermined distance between two adjacent poles of an open wire line.

SPAR (SUPER-PRECISION APPROACH RADAR).

Light weight, low cost, easily transportable GCA radar set. Weight of the equipment is approximately 2000 pounds. It was designed especially for small civil airports and for military applications where transportability is an important consideration. A similar GCA radar set called QUADRADAR has also been developed. The SPAR is a precision approach system only; whereas the Quadradar has search, precision taxi control, and heightfinder.

SPARE.

Available or can be made available and are not in use.

SPARK.

Momentary flash due to an electric discharge through air or some other dielectric material.

SPARK CAPACITOR.

Capacitor connected across a pair of contact points, or across the inductance which causes the spark for the purpose of diminishing sparking at these points.

SPARK COIL.

Induction coil used to produce spark discharges.

SPARK FREQUENCY.

Number of sparks occurring per second in a spark transmitter. It is the group frequency of the trains of waves, not the frequency of the individual waves.

SPARK GAP.

Gap between metallic electrodes across which a spark passes. In modern radio practice, used principally as a protection against excessive voltage surges.

SPARK KILLER.

Electric network, usually consisting of a capacitor and resistance in series, connected across a pair of contact points, or across the inductance which causes the spark, for the purpose of diminishing sparking at these points.

SPARK LAG.

Time interval between attainment of the sparking voltage and the passage of a spark.

SPARK PHOTOGRAPHY.

1. Process of obtaining a photograph of a rapidly moving object such as a bullet, by illuminating the object suddenly with the light from a single electric spark.
2. Photography of sparks by means of their own light.

SPARK PULSE MODULATOR.

Modulator which generates pulses at high power level directly from a pulse-forming line. The spark may occur in air, or in a gas-filled tube.

SPARK RECORDER.

Recorder in which the recording paper passes through a spark gap formed by a metal plate underneath and a moving metal pointer above the paper. Sparks from an induction coil pass through the paper periodically, burning small holes that form the record trace. This arrangement avoids the friction of a pen on paper.

SPARK SPECTRUM.

Spectrum of a substance as produced with the light from a spark passing between terminals

made of that substance or through an atmosphere of that substance.

SPARK SUPPRESSOR.

Network, usually consisting of a capacitance and resistance in series, connected across a pair of break spring contacts to diminish sparking.

SPARK TRANSMITTER.

Radio transmitter which utilizes the oscillatory discharge of a condenser through an inductor and a spark gap as the source of its radio-frequency power.

SPARK-GAP MODULATION.

Modulation process which produces one or more pulses of energy by means of a controlled spark-gap break-down for application to the element in which modulation takes place.

SPARK-GAP MODULATOR.

Modulator, employed in certain radar transmitters, in which a pulse-forming line is discharged across a spark gap; the spark gap may be either a stationary or rotary type.

SPARK-TYPE GENERATOR.

High-frequency generator used for electronic heating purposes and employing much the same circuit as the spark transmitters used in the early days of radio.

SPARKING.

Intentional or accidental spark discharges, as between the brushes and commutator of a rotating machine, between contacts of a relay or switch, or at any other point at which an inductive circuit is broken.

SPARKING VOLTAGE.

Minimum voltage at which a spark discharge occurs between electrodes of given shape, at a given distance apart, under given conditions.

SPARKOVER.

Breakdown of the air between two electrical conductors permitting the passage of a spark.

SPARROW.

Air-to-air guided missile developed for the Navy. It is a 300 lb., delta wing rocket powered weapon

with a solid-propellant sustainer that pushes it to a burnout speed of approximately Mach 2. Its range is about five miles. It is eight feet, three inches long, six inches in diameter, and has a fin or wing span of two feet, three inches. Guidance is by the beam rider technique and semi-active homing.

SPATIOGRAPHY.

System proposed by Dr. Hubertus Strughold for charting a "geography" of space.

SPDT (SINGLE-POLE, DOUBLE-THROW).

Used to identify a switch used to connect one terminal to either of two other terminals.

SPEAKING ARC.

DC arc having af currents superposed on the direct current. This causes the arc to reproduce sounds in a manner similar to that of a loud-speaker, and to vary its light output at an af rate as required for sound-film recording purposes.

SPECIAL.

Air defense term for a track classification for friendly airborne objects on which flight-following reporting and forward tell is specified and requested by the NORAD combat operations center.

SPECIAL CATEGORICAL NAVY WITH AIR FORCE).

Navy personnel and units in the SCNRWAF category are assigned with the Air Force for the performance of Air Force functions only. They are charged to Air Force strength.

SPECIAL CATEGORY OF ARMY PERSONNEL WITH THE AIR FORCE.

Army personnel and units in the SCNRWAF category are assigned with the Air Force for the performance of Air Force functions only. They are charged to Air Force strength.

SPECIAL CONTRACT.

Special contract is one entered into a communication company, governing specific communication services or construction of communication facilities not covered by a general contract.

SPECIAL EQUIPMENT.

Equipment, in Army and Air Force usage, not authorized in standard equipment publications but determined as essential in connection with a contemplated operation, function or mission.

SPECIAL EXPANDED DISPLAY.

In the SAGE center, a display presented only to the Identification Officer, upon his request, which assists in correlating air-movement data with tracks.

SPECIAL LIST OF EQUIPMENT.

Air Force publication which establishes interim equipment allowances pending inclusion of such equipment in appropriate authorization documents.

SPECIAL OPERATING GROUP.

Group of four letters, identical in appearance with address groups, provided for use in the headings of messages to give special instructions.

SPECIAL PURPOSE SYSTEM.

Specific cryptoaids intended only for certain types of messages. They include general and auxiliary signal books and signal vocabulary, authenticator system, aircraft codes, fighter director vocabulary, etc.

SPECIAL REQUEST.

Computer or manually generated request to a heightfinder site for information relative to height, flight size, formation, and separation of a specified track.

SPECIAL REQUISITION.

Requisition submitted when the necessity for expeditious delivery and receipt will not permit the use of established replenishment requisitioning schedules. Special requisitions, properly substantiated, will be submitted when supplies are required, within 15 days, to prevent work stoppage and grounding of aircraft in case of disaster, support missions of mercy, or to meet urgent request directed by higher authority, also when required property is not specifically covered by one of the priority designations.

SPECIAL SECOND SELECTOR.

Second selector which is reached from the banks of regular first selectors and which is used to provide trunking facilities to certain special telephone services.

SPECIAL STAFF.

All staff officers having duties at a headquarters and not included in the general (coordinating) staff group or in the personal staff group. The special staff includes certain technical specialists and heads of Services such as the QM Officer, AA Officer, and TPN Officer.

SPECIFIC CONDUCTIVITY.

Conducting ability of a material in mhos per cubic centimeter. It is the reciprocal of resistivity.

SPECIFIC CRYPTOSYSTEM.

Application of a specific set of rules and aids to a general cryptosystem.

SPECIFIC DIELECTRIC STRENGTH.

Dielectric strength per millimeter of thickness of an insulating material.

SPECIFIC GRAVITY.

Weight of a given volume of substance compared to that of an equal volume of chemically pure water at 4°C. (39.2°F.)

SPECIFIC INDUCTIVE CAPACITANCE.

Property of a dielectric material that determines how much electrostatic energy can be stored per unit volume when unit voltage is applied. In effect, it is the ratio of the capacitance of a capacitor filled with a given dielectric as to that of the same capacitor having only a vacuum as dielectric. (Reference: PERMITTIVITY OR DIELECTRIC CONSTANT.)

SPECIFIC KEY.

Element which may consist of a letter, number, word, phase, sentence, special document, book or especially prepared tables, etc., usually of a variable nature and easily changeable at the will of the correspondents, or prearranged for them or for their agents by higher authority. It is used with a specific cryptosystem to determine the encipherment of a message and includes both the message keying element and daily keying element.

SPECIFIC REDUCTANCE.

Ratio of the magnetic induction B in a region to the magnetic intensity H in that same region. (Reference: RELUCTIVITY.)

SPECIFIC RESISTANCE

Resistance of a unit conductor having a length of one foot and a cross-sectional area of one circular mil.

SPECIFIC VOLUME.

Volume of a substance per unit mass; the reciprocal of the density.

SPECIFICATION.

Prepared engineering information which covers portions or types of equipment and is subdivided into smaller equipment, units, or parts which constitute the individual code numbers.

SPECTRAL DISTRIBUTION CURVE.

Graph showing the relation between the radiant energy and wave length of the radiation from a light source.

SPECTRAL RADIANT INTENSITY.

Radiant intensity per unit wave-length interval, such as watts per steradian per micron.

SPECTROMETER.

Test instrument that determines the frequency distribution of the energy generated by any source and displays all the components simultaneously.

SPECTROPHOTOELECTRIC.

Pertaining to the dependence of photoelectric phenomena on the wave length of the incident radiation.

SPECTRUM.

Range of electromagnetic radiations, from the longest known radio waves to the shortest known cosmic rays. Light, the visible portion of the spectrum, lies about midway between the two extremes.

SPECTRUM ANALYSIS.

Analysis of a chemical substance by means of the spectrum produced by heating the substance to incandescence.

SPECTRUM ANALYZER.

Test instrument used to show the distribution of energy contained in the frequencies emitted by a pulse magnetron; also used to measure the Q of resonant cavities and lines.

SPECTRUM LINE.

Definite wave length or a narrow range of wave lengths, corresponding to a distinct image of the spectroscopy slit made by that wave length. Also, one of the traces made by a mass spectrograph, corresponding to an atom having a particular mass.

SPECULAR REFLECTION.

Reflection of light, sound, or radio waves from a surface so smooth that its inequalities are small in comparison with the wave length of the incident rays, so that each incident ray gives rise to a reflected ray in the same plane. (Reference: REGULAR REFLECTION.)

SPEECH AMPLIFIER.

An af voltage amplifier for amplifying signals from a microphone.

SPEECH FREQUENCY.

Audio frequency in the range from about 100 to 2,000 cycles, which includes all components considered essential for intelligibility of speech.

SPEECH INTERPOLATION.

Method of obtaining more than one voice channel per voice circuit by giving each subscriber a speech path in the proper direction only at times when his speech requires it.

SPEECH INVERTER.

Apparatus for interchanging high and low speech frequencies by a method involving removal of the carrier wave and transmission of only one sideband in radio-telephony. This renders the speech unintelligible unless picked up by apparatus capable of replacing the carrier wave in the correct number.

SPEECH LEVEL.

Energy of speech (or music) measured on a volume indicator in Volume Units.

SPEECH SCRAMBLER.

More elaborate version of a speech inverter, involving division of the audio-frequency spectrum into more than two groups, inversion of frequencies in each group, and sometimes also further mixing of groups.

SPEED.

Rate of motion relative to a stated reference point measured in terms of the passage of time.

SPEED OF TRANSMISSION, DETERMINING.

Speed of transmission shall be determined by the number of times the word "Paris" or groups of characters having equivalent unit length content, followed by an inter-word space, is transmitted in a given period of time. Used in radio-telegraphy.

SPEED REGULATION OF A CONSTANT-SPEED DC MOTOR.

Change in speed when the load is reduced gradually from the rated value to zero with constant applied voltage and field rheostat setting, expressed as a percent of speed at rated load.

SPEED REGULATOR.

Regulator which functions to maintain the speed of a motor at a predetermined value or vary it according to a predetermined plan.

SPHERE GAP.

Spark gap, in which the electrodes are spheres, used as an excess voltage protective device.

SPHERE PHOTOMETER.

Photometer in which the source of light to be measured is placed inside a sphere having white inside walls. The light reflected from these walls through a suitable placed opening is measured to obtain the mean spherical candlepower of the source.

SPHERE-GAP VOLTMETER.

Simple instrument for measuring high voltages, consisting of a sphere gap. The electrodes are moved together until the spark will just barely pass. The voltage can be calculated from the gap spacing and the diameter of the electrodes or can be read directly on a previously calibrated scale.

SPHERICAL ABERRATION.

General term for image defects that are due to the spherical form of a lens or mirror. These defects cause a blurred image because central and marginal rays are brought to different focuses by the lens or mirror. Common types of spherical aberration are astigmatism and curvature of field.

SPHERICAL COORDINATES.

System of polar coordinates in which the origin is the center of a sphere and the points all lie on the surface of the sphere. The polar axis of such a system cuts the sphere at its two poles.

SPHERICAL WAVE.

Wave whose wave front is a spherical surface.

SPHERICAL-EARTH ATTENUATION.

Attenuation over an imperfectly conducting spherical earth in excess of that over a perfectly conducting plane.

SPIDER.

Highly flexible ring, washer, or punched flat member used to center the voice coil of a dynamic loudspeaker with respect to the pole piece without appreciably hindering in-and-out motion of the voice coil and its attached diaphragm.

SPIDER-WEB ANTENNA.

All-wave receiving antenna having several different lengths of doublets connected somewhat like the web of a spider to give favorable pick-up characteristics over a wide range of frequencies.

SPIDER-WEB COIL.

Flat coil having an open weave, somewhat like the bottom of a woven basket, used in older radio receivers.

SPIKE.

Transient of short duration, comprising part of a pulse, during which the amplitude considerably exceeds the average amplitude of the pulse.

SPINNER.

1. Automatically rotatable radar antenna, together with directly associated equipment.

2. Part of a mechanical scanner which rotates about an axis, most generally restricted to cases where the speed of rotation is relatively high.

SPINNING ELECTRON.

Term used to describe an electron that is assumed to spin with an angular momentum.

SPINTHARISCOPE.

Instrument for viewing the scintillations of alpha particles on a luminescent screen.

SPIRAL FOUR.

1. Lesser known name for Spinal-quad field cable.

2. Structural unit employed in telephone and telegraph cables, consisting of four separately insulated conductors twisted about a common axis.

SPIRAL QUAD OR STAR QUAD.

Structural unit employed in telephone telegraph cables, consisting of four separately insulated conductors twisted about a common axis.

SPIRAL SCANNING.

Radar scanning in which the RF beam traces out a spiral. The antenna motion is obtained by rotating a paraboloid antenna rapidly about an axis and slowly changing or tilting the axis.

SPLASHPROOF.

So constructed and protected that external splashing will not interfere with its successful operation.

SPLASHPROOF MACHINE.

Machine in which the ventilating openings are so constructed that drops of liquid or solid particles falling on the machine or coming toward it in a straight line at any angle not greater than 100° from the vertical (10° below the horizontal) cannot enter the machine either directly or by striking and running along a surface.

SPLICE.

Joint used for connecting in series two lengths of conductor or cable.

SPLIT.

Separation of radar data from a single track to such a degree that one or more additional tracks may be initiated.

SPLIT FITTING.

Conduit fitting, bend, elbow, or tee, split longitudinally so that it can be placed in position after the wires have been drawn into the conduit, the two parts being held together by screws or other device.

SPLIT ROTOR PLATES.

Capacitor rotor plates having radial cuts to permit bending portions of the plates during alignment in a receiver.

SPLIT-ANODE MAGNETRON.

One in which the cylindrical anode is divided longitudinally into halves, between which extreme high-frequency oscillations are produced.

SPLIT-CONDUCTOR CABLE.

Cable in which each conductor is composed of two or more insulated conductors normally connected in parallel.

SPLIT-PHASE MOTOR.

Single-phase induction motor equipped with an auxiliary winding, displaced in magnetic position from, and connected in parallel with, the main winding.

SPLIT-STATOR VARIABLE CAPACITOR.

Variable capacitor having a rotor section that is common to two separate stator sections. Used in grid and plate tank circuits of transmitters for balancing purposes.

SPLITTING KEY.

Key used by a manual operator to select either front or back cord independently of the other.

SPOILING.

Classified definition. (Reference: AFM 100-50.)

SPOOF.

Equipment or procedures which cause the enemy to be mislead. Examples are the continued use of a frequency after it has been effectively jammed, at the same time introducing new frequencies; and the establishment of decoy radio transmitters to lead the enemy into a considerable jamming effort in the belief that they are part of a navigation system.

SPORADIC E.

Ionization that appears at E-layer heights. This ionization is more noticeable toward the polar regions and may be due to particle radiation from the sun. It occurs at all hours of the day. A sporadic E-layer sometimes breaks away from the normal E-layer and exhibits special erratic characteristics.

SPORADIC E-LAYER.

Portion of the normal E-layer in the ionosphere that sometimes breaks away and exhibits special erratic characteristics.

SPORADIC REFLECTIONS.

Sharply defined reflections of substantial intensity from the sporadic E-layer at frequencies greater than the critical frequency of the layer. They are variable with respect to time of occurrence, geographic location, and range of frequencies at which they are observed. (Reference: ABNORMAL REFLECTIONS.)

SPOT.

Point of impact of the electron beam on the screen of a cathode-ray tube.

SPOT JAMMERS.

Classified definition. (Reference: AFM 100-50.)

SPOT JAMMING.

Jamming of a specific channel or frequency.

SPOT NOISE FIGURE.

Of a transducer at a selected frequency, the ratio of the output noise power per unit bandwidth to portion thereof attributable to the thermal noise in the input termination per unit bandwidth, the noise temperature of the input termination being standard (290°K). The spot noise figure is a point function of input frequency.

SPOT PROJECTION.

Optical method in facsimile, in which the scanning or recording spot is delineated by an aperture between the light source and the subject copy or record sheet. The optical system in which the scanning or recording spot is the size of the elemental area on the subject copy or record sheet.

SPOT REFLECTOR.

1. Chaff dispensed at random.
2. Balloon-carried corner reflectors with a random distribution.

SPOT SPEED.

The product, in facsimile, of the length of scanning line by the number of scanning lines per second.

SPOT SPEED.

(Reference: SCANNING SPEED.)

SPOT WELDING.

Resistance-welding process in which fusion is confined to a relatively small portion (spot) of the area of the lapped parts to be joined.

SPOTTINESS.

Bright spots scattered irregularly over the reproduced image in a television receiver, due to man-made or static interference entering the television system at some point.

SPOTTING.

Observing radar echoes from splashes or ground-bursts.

SPREAD GROOVE.

In disk recording, a groove, with greater than normal pitch, cut between recordings of short-time duration, thus separating the recorded material into bands while still enabling the reproducing stylus to travel from one band to the next.

SPREADER.

Insulating cross arm used to hold apart the wires of a transmission line or multiple-wire antenna.

SPRING.

Resilient flat piece of metal forming, or supporting, a contact member in a jack or a key.

SPRING CONTACT.

Relay or switch contact mounted on a flat spring, usually of phosphor bronze.

SPRING PILE-UP.

Assembly of all the contact springs operated by one armature lever.

SPRING-RETURN SWITCH.

Switch in which the contacts return to their original positions when the operating knob is released.

SPRINKLER SUPERVISORY SYSTEM.

Supervisory system attached to an automatic sprinkler system which initiates signal transmission automatically upon the occurrence of abnormal conditions in valve positions, air or water pressure, water temperature or level, the operability of power sources necessary to the proper functioning of the automatic sprinkler, etc.

SPST (SINGLE-POLE, SINGLE-THROW).

Used to identify a switch used to connect or disconnect one pair of terminals.

SPUDDER.

Tool for digging.

SPURIOUS COUNTS.

Counts which are caused by the normal contamination or cosmic ray background radiation.

SPURIOUS RADIATION.

Emissions from a radio transmitter at frequencies outside of its assigned or intended emission frequency.

SPURIOUS RESPONSE.

1. Reponse of an electric transducer or device at a frequency other than the desired frequency of response.
2. Term used in electronic warfare to describe the undesirable signal images in the intercept receiver resulting from the mixing of the intercepted signal with harmonics of the local oscillators in the receiver.

SPURIOUS SIGNAL.

Unwanted signal, either generated in the equipment itself or having external origin (noise).

SPURT TONE.

Short af pulse used for signaling or dialing selection.

SPUTNIKS.

Russian satellites, first to reach orbit.

SPUTTER.

Process of forming a thin film of metal on a surface by exposing it to particles of atom knocked out from a cathode during bombardment by positive ions. Sputter is the English designation. (Reference: SPUTTERING.)

SPUTTERING.

1. In disk recording, a process sometimes used in the production of the metal master, wherein the wax or lacquer original is coated with an electrical conducting layer by means of an electrical discharge in a vacuum. (Reference: CATHODE SPUTTERING.)

2. Process of forming a thin film of metal on a surface by exposing it to particles of atoms knocked out from a cathode during bombardment by positive ions. Called sputter by the English.

SQC (STATION QUALITY CONTROL).

Refers to the quality control program of an AC&W unit to insure proper operation of the station plotting board.

SQUARE LAW.

Average plate current from a detector tube varies as the square of the voltage or amplitude of the signal impressed on the grid of the detector.

SQUARE MIL.

Area equivalent to a square having sides one mil (0.001 inch) long.

SQUARE WAVE.

Periodic wave which alternately for equal lengths of time assumes one of two fixed values, the time of transition being negligible in comparison.

SQUARE-LAW DETECTION.

Form of detection in which the output voltage is substantially proportional, over the useful range of the detecting device, to the square of the voltage of the input wave.

SQUARE-LAW DETECTOR.

Detector theoretically operated over a parabolic

(square-law) characteristic curve, for the purpose of producing new frequencies. Only the modulation signal is useful.

SQUARE-WAVE AMPLIFIER.

Resistance-coupled amplifier, the circuit constants of which are such as to amplify a square wave with the minimum amount of distortion. In effect, a wide-band video amplifier.

SQUARE-WAVE GENERATOR.

Signal generator for producing square or rectangular waves.

SQUEALING.

Condition in which a radio receiver produces a high pitched note or squeal along with the desired intelligence due to interference between stations or to oscillation in some receiver circuit.

SQUEEZABLE WAVEGUIDE.

Waveguide used in rapid scanning, the dimensions of which can be altered periodically.

SQUEEZE SECTION.

Length of waveguide so constructed that alteration of the critical dimension is possible with a corresponding alteration in the electrical length.

SQUEGGER.

Self-quenching oscillator in which the suppression occurs in the grid circuit.

SQUEGGING.

Condition of self-blocking in an electron-tube oscillator circuit.

SQUEGGING OSCILLATOR.

Oscillator usually operating at radio frequency, which oscillates briefly and then cuts itself off due to grid current. This action is repeated periodically. A self-pulsing oscillator.

SQUELCH.

Part of a receiver circuit which reduces noise automatically when no carrier is being received. (Reference: NOISE SUPPRESSOR.)

SQUELCH CIRCUIT.

Circuit for preventing a radio receiver from producing audio frequency output in the absence of a signal having predetermined characteristics.

A squelch circuit may be operated by signal energy in the receiver pass band, by noise quieting, or by a combination of the two (ratio squelch). It may also be operated by a signal having special modulation characteristics (selective squelch).

SQUINT.

Ambiguous term, in radar, meaning either, the angle between the two major lobe axes of a lobe switching antenna, or the angular difference between the axes of an antenna radiation and a selected geometric axes, such as the axes of the reflector.

SQUIRREL CAGE WINDING.

Permanently shortcircuited winding, usually un-insulated (chiefly used in induction machines), having its conductors uniformly distributed around the periphery of the machine and joined by continuous end rings.

SQUIRREL CAGE INDUCTION MOTOR.

Motor in which the secondary circuit consists of a squirrel cage winding suitably displaced in slots in the secondary core.

SQUITTER.

Random Firing, intentional or otherwise, of a transponder transmitter in the absence of interrogation.

SR (SELECTIVE RINGING).

Telephone arrangement in which only the bell of the called subscriber rings, with other bells on the party line remaining silent.

SR (SHORT RANGE).

Classification of ground radar sets by slant range. It is applied to equipment whose maximum range on a reflecting target of one square meter normal to the signal path exceeds 50 miles but is less than 150 miles providing that line-of-sight exists between the target and radar.

SR (SURVEILLANCE RADAR).

Radar set or system used in a ground-controlled approach system to detect aircraft within a certain radius of an airdrome and present continuously to the radar operator information as to

the position, in distance and azimuth, of these aircraft.

SRE (SURVEILLANCE RADAR ELEMENT).

The radar of the GCA system used to direct traffic to a region where it may be observed by the PAR radar.

SS (SAGE SECTOR).

Area of the SAGE defense system.

SS (SINGLE-SIDEBAND MODULATION).

Varying the amplitude, phase, or frequency of a single side-band transmission carrier wave.

SS (STANDARD FREQUENCY STATION).

International Telecommunications Union designation for Standard Frequency Station.

SS-FM.

System of multiplex in which the several single sideband subcarriers are used to frequency modulate a second carrier.

SS-PM.

System of multiplex in which the several single sideband subcarriers are used to phase modulate a second carrier.

SS LORAN (SKY-WAVE SYNCHRONIZED LORAN).

Special long-range aid to navigation of both air and surface ships.

SSB (SINGLE-SIDEBAND TRANSMISSION).

Method of operation in which one sideband is transmitted and the other sideband is suppressed. The carrier wave may be either transmitted or suppressed.

SSC (SAGE SECTOR COMMANDER).

Air Force officer responsible for the air defense of a sector.

SSM (SURFACE-TO-SURFACE MISSILE).

Missile designed for use against surface targets such as airfields, cities, etc., launched from a surface installation either fixed or mobile.

SST.

Abbreviation for SACs special traffic.

SSV (SHIP TO SURFACE VESSEL).

Designation of a radar used to detect surface vessels from patrol surface craft.

ST (SHOP TELEGRAPH STATION).

International Telecommunications Union designation for Shop Telegraph Station.

STA (SINGLE-TAPE-ARMORED).

Used to identify single strand, tape wrapped, armored wire or cable.

STA (STATION).

1. Separate transmitter or receiver or a combination of transmitters and receivers including the accessory equipment required for carrying on a definite radio communication service. The station assumes the classification of the service in which it operates permanently or temporarily.

2. Subscribers instrument (telephone).

STA (STRAIGHT-IN-APPROACH).

Aircraft landing approach without circling or flying a pattern.

STABILITY.

Freedom from undesired variation.

STABILITY OF NUCLEAR STRUCTURE.

Ability of an atom nucleus to resist changes.

STABILIVOLT.

Gas-filled tube containing a number of concentric coated iron electrodes. Used as a source of practically constant voltage for apparatus drawing only small current.

STABILIZATION.

System for maintaining a radar beam in a desired direction in space despite the roll and pitch of the ship or aircraft.

STABILIZED FEEDBACK.

Feedback employed in such a manner as to stabilize the gain of a transmission system or section thereof with respect to time or frequency or to reduce noise or distortion arising therein. Note. The section of the transmission system may include amplifiers only or it may include modulators.

STABILIZED SHUNT-WOUND MOTOR.

Shunt-wound motor having a light series winding added to prevent a rise in speed or to obtain a slight reduction in speed, with increase of load.

STABILIZING WINDING.

Auxiliary winding used particularly in star-connected transformers for such purposes as the following:

1. To stabilize the neutral point of the fundamental frequency voltages.
2. To protect the transformer and the system from excessive third-harmonic voltages.
3. To prevent telephone interference caused by third-harmonic currents and voltages in the lines and earth. (Reference: TERTIARY WINDING.)

STABLE ELEMENT.

Gyroscopic instrument which maintains a true vertical, and develops angles of deviation of a ship's deck or aircraft from the true horizontal and provides input data to all computers or stabilization systems.

STACK.

Vertical or substantially vertical array of antenna elements.

STACKED ARRAY.

Array in which the half-wave antenna elements are stacked one above the other.

STACKED DIPOLE ANTENNA.

Generic term applied to a number of antenna designs in which antenna directivity is increased by providing a number of identical dipole elements, excited either directly or parasitically. The resultant radiation pattern will depend on the number of dipole elements used, the spacing and phase difference between the elements, and the relative magnitudes of the currents.

STAFF SUPERVISION.

Process of advising other staff officers and individuals subordinate to the commander of the commander's plans and policies, interpreting those plans and policies, assisting such subordinates in carrying them out, determining the extent to which they are being followed, and advising the commander thereof.

STAFF WEATHER OFFICER.

In a SAGE center, the Senior Weather Officer

assigned to a unit. He is the member of the Battle Staff responsible for all weather information for the area of responsibility.

STAGE.

1. One step, especially if part of a multistep process, or the apparatus employed in such a step; usually applied to an amplifier.
2. Single electron tube and its associated circuits or a circuit of two or more tubes connected in push-pull, push-push, or parallel, which serves the same function as a single tube circuit.
3. Circuit containing a single vacuum tube. In a multiple-tube circuit, a stage is defined as all parts connected between the control grid of one tube and the control grid of the next adjacent tube.

STAGE EFFICIENCY.

Ratio of useful power delivered to the load alternating current and to the plate power input direct current.

STAGE-BY-STAGE ELIMINATION METHOD.

Method of locating trouble in radio receivers by checking performance of one stage after another with a test signal introduced by a signal generator.

STAGGER TUNING.

Method of aligning the IF stages of a superheterodyne receiver in order to produce wide bandwidth. This is accomplished by peaking alternate IF transformers at slightly different frequencies.

STAGGER-TUNED AMPLIFIER.

Amplifier consisting of two or more single-tuned stages which are tuned to different frequencies.

STAGGERING.

Offsetting of two channels of different carrier systems from exact sideband frequency coincidence to avoid mutual interference.

STAGGERING ADVANTAGE.

Effective reduction, in DB, of interference between carrier channels, due to staggering.

STALLOY.

Steel alloy containing about 2.75 per cent silicon with some manganese, sulphur, and phosphorus. Used for iron cores of transformers and also for headphone diaphragms because of its low hysteresis loss and high resistivity, resulting in low eddy-current loss.

STALO.

Extremely stable CW oscillator used as a local oscillator in the superheterodyne radar receiver in an MTI system. The term is a contraction of "Stabilized Local Oscillator". (Reference CO-HO.)

STAMPERS.

Plates from which phonograph records are stamped in presses.

STAMPINGS.

Laminations.

STAND-BY ITEM.

Replacement item of supply which, because of lack of movement or regulated status, does not justify maintenance of a quantitative level but on which a quantity is required to meet one-time emergencies to insure uninterrupted operation of local facilities (including transient aircraft), safeguard health, or protect personnel or property.

STANDARD.

1. Exact value, or a concept that has been established by authority, custom, or agreement, to serve as a model or rule in the measurement of a quantity or in the establishment of a practice or procedure.
2. Type classification of equipment. A satisfactory item capable of meeting an Air Force need.

STANDARD ATMOSPHERE.

Condition of the atmosphere in which the temperature and moisture content of the air decrease uniformly with height. In the standard atmosphere, the air temperature decreases with increasing altitude from 59°F (15°C) at sea level at the rate of 6.5°C per kilometer (18.8°F per mile). Although this condition is postulated by

standard, it is not necessarily normal at any particular location. The atmosphere is likely to be of standard composition when strong, gusty winds are blowing, because the turbulence created prevents both stratification of the air and establishment of nonstandard temperature and humidity gradients.

STANDARD BEAM APPROACH.

British modification of the prewar German Torony Tow Approach Aid. The ground-based system consists of three beacons, the main beacon, intermarker beacon and outer marker beacon. The airborne equipment consists of two receivers, one tuned to the marker beacon frequency (38 MC), and the other tuned to any one of six frequencies transmitted by the main beacon (35-40 MC). The main beacon is sited about 300 yards from the stop end of the runway on the extended centerline, and transmits two cardioid patterns overlapping along the runway centerline. The two receivers are alternately keyed with interlocking Morse letters, or with dots and dashes. An equal signal zone is thus formed, and a continuous tone will be heard by the pilot if he is on course. The inner and outer marker beacons are located at the airfield boundary and 3000 yards from the approach end of the runway, respectively. They are distinctly keyed and modulated to provide the pilot with distance to go to touchdown information. The equipment is subject to course bends, is difficult to fly (largely due to its aural display which gives data too slowly), and provides no glide path information.

STANDARD BROADCAST BAND.

Band of frequencies extending from 550 to 1,600 kilocycles, both 550 and 1,600 kilocycles being the carrier frequencies of broadcast channels.

STANDARD BROADCAST CHANNEL.

Band of frequencies occupied by the carrier and two sidebands of a broadcast signal, with the carrier frequency at the center. Channels are designated by their assigned carrier frequencies. The channel for a given broadcast station allows for the carrier frequency and a frequency band five kilocycles wide on either side of the carrier.

STANDARD BROADCAST STATION.

Station licensed for the transmission of radio-telephone emissions primarily intended to be received by the general public.

STANDARD CANDLE.

Unit of a candlepower, equal to a specified fraction of the visible light radiated by a group of 45 carbon-filament lamps preserved at the National Bureau of Standards, when the lamps are operated at a specified voltage. The standard candle was originally the amount of light radiated by a tallow candle of specified composition and shape.

STANDARD CAPACITOR.

Capacitor constructed in such a manner that its capacitance is not likely to vary, and having a convenient value such as 0.25 microfarad or some other accurately known value. Used chiefly in capacitance bridges.

STANDARD CELL.

Cell which serves as a standard of electromotive force.

STANDARD FACILITY.

Basic communications-electronics functional entity which will satisfy a specific portion of a communications electronics operational requirement. Standard facilities are described in the USAF Communications - Electronics Program (PC) and designated by a code. An associated Standard Facility Equipment List indicates the material required to install the standard facility.

STANDARD FACILITY EQUIPMENT LIST.

List of major items, components and hardware considered necessary to install a specific type of communications-electronics facility.

STANDARD FREQUENCY SERVICE.

Radio communication service for the transmission of standard and specified frequencies of known high accuracy, intended for general reception.

STANDARD FREQUENCY SIGNAL.

One of the highly accurate signals broadcast by the National Bureau of Standards radio station WWV on a frequency of 5,000 kilocycles and

on the other frequencies. Used for testing and calibrating radio equipment all over the world.

STANDARD FREQUENCY STATION.

Station in the standard frequency service.

STANDARD INSTRUMENT APPROACH.

Usual approach for landing made without visual reference to the ground by use of aircraft instruments and ground-based electronic or communication systems or devices.

STANDARD INSTRUMENT DEPARTURE.

Usual takeoff made without visual reference to the ground by use of aircraft instruments and ground-based electronic or communication systems or devices.

STANDARD NOISE TEMPERATURE.

Standard reference temperature T for noise measurements is taken as 290°K .

Note. $kT/e = 0.0250$ volt, where e is the electron charge and $^\circ\text{K}$ is Boltzmann's constant.

STANDARD NOMENCLATURE LIST.

List of the official Air Force names of items of equipment.

STANDARD PROPAGATION.

Propagation of radio waves over a smooth spherical earth of specified dielectric constant and conductivity, under conditions of standard refraction in the atmosphere.

STANDARD REFRACTION.

Refraction which would occur in an idealized atmosphere in which the index of refraction decreases uniformly with height at a rate of 39×10^{-6} per kilometer.

Note. Standard refraction may be included in ground wave calculations by use of an effective earth radius of 8.5×10^6 meters, or $4/3$ the geometrical radius of the earth.

STANDARD RESISTANCE.

Resistance carefully constructed so that its value is not likely to change except in a known manner with temperature. Its value is known at any time to a high degree of accuracy.

STANDARD TEST-TONE POWER.

One milliwatt (0 DBM) at 1,000 CPS.

STANDARDS AND RECOMMENDED PRACTICES.

Standards and recommended practices published by the International Civil Aviation Organization.

STANDBY.

Condition of equipment which will permit complete stable operation within a short period of time.

STANDBY BATTERY.

Storage battery held in reserve as an emergency power source in event of failure of regular power facilities at a radio station or other location.

STANDBY CIRCUITS.

Leased Conus-overseas channels, normally used for commercial traffic, which are arranged for rapid diversion to Air Force use. Payment for the circuits is made only for the periods when they are in use by the Air Force leasing agency.

STANDBY COMPUTER.

Computer of a duplexed system not currently performing air-defense functions.

STANDBY FACILITY.

C-E facility in caretaker status. It is usually a C-E facility left standing after an operational need ceases to exist, but because of possible future use has not been dismantled.

STANDING GROUP.

Permanent subcommittee of the Military Committee of the North Atlantic Council, serving as an executive body, and composed of the representatives of the Chiefs of Staff of the United States, France, and the United Kingdom.

STANDING GROUP LIAISON OFFICER TO THE NORTH ATLANTIC COUNCIL.

Member of the North Atlantic Council delegated to assure cooperation and unity of purpose in working toward a common goal.

STANDING GROUP MILITARY SECTION.

Armed Forces delegates to the North Atlantic Council.

STANDING ON-NINES CARRY.

(Reference: CARRY)

STANDING OPERATING PROCEDURE.

Set of instructions covering those features of operations which lend themselves to a definite or standardized procedure without loss of effectiveness. The procedure is applicable unless prescribed otherwise in a particular case. Thus the flexibility necessary in special situations is retained.

STANDING ORDER.

Order of relative permanence.

STANDING WAVE.

1. Distribution of current and voltage on a transmission line formed by two sets of waves traveling in opposite directions, and characterized by the presence of a number of points of successive maxima and minima in the distribution curves. Standing waves indicate that power is being lost in transmission, therefore efforts are made to keep standing waves to a minimum.
2. Sinusoidal distribution of current and voltage amplitudes along a transmission line as a result of the reflection of energy from a point where a mismatch of impedances occurs.
3. Condition created by two waves traveling in opposite directions, resulting in a stationary pattern of waves on conductors or in space.

STANDING WAVE INDICATOR.

Instrument containing a detecting device (bolometer, thermocouple or crystal) which enables one to determine the ratio of the maximum voltage to the minimum voltages of the combined incident and reflected waves. The deflection or current reading is proportional to the time average of the square of the voltage at any given point. Other SW detectors may read voltage directly.

STANDING-WAVE RATIO.

1. Ratio of current (or voltage) at a loop (maximum) in a transmission line to the value at a (minimum) node. It is equal to the ratio of the characteristic impedance of the line to the

impedance of the load connected to the output end of the line.

2. Ratio of the amplitude of a standing wave at an anti-node to the amplitude at a node.

STANDOFF INSULATOR.

Insulator used to support a wire, or other radio component, at a desired distance away from the structure on which the insulator is mounted.

STAR.

Celestial sphere of glowing gases, such as the sun.

STAR CHAIN.

Group of navigational radio transmitting stations in Y form with the master station in the center and three (or more) slaves around the circumference of a rough circle.

STAR TRACKER.

Telescopic eye mounted in a rocket or space ship which, in conjunction with electronic computers, can be used for automatic navigation.

STAR-CONNECTED CIRCUIT.

Polyphase circuit in which all the current paths within the region that limits the circuit extend from each of the joints of entry of the phase conductors to a common conductor (which may be the neutral conductor).

STAR-QUAD CABLE.

Consists of four wires laid together and twisted as a group.

STARLIGHT TUBE.

Supersensitive electronic tube, smaller than 25-watt incandescent light bulb, which can be used to measure accurately the feeble quantity of electricity equivalent to the light of a star many million-million miles away. It is also used in the electrochemical analysis of metals, such as steel, and the detection of impurities in high-explosive compounds.

START MOTOR.

Motor which serves to bring the facsimile synchronous motor up to sync speed.

START-STOP.

System of teletypewriter operation whereby the receiving machine is stopped after each letter and started by the next one.

START-STOP MULTIVIBRATOR.

Biased rectangular wave generator which operates for one cycle when a synchronizing trigger signal is applied. (Reference: FLIP-FLOP MULTIVIBRATOR.)

START-STOP PRINTING TELEGRAPH.

Form of printing telegraph in which the signal receiving mechanisms, normally at rest, are started in operation at the beginning and stopped at the end of each character transmitted over the channel.

STARTER.

Electric controller for accelerating a motor from rest to normal speed or for actuating a motor from rest to motion.

STARTING ANODE.

Electrode which is used in establishing the initial arc.

STARTING CIRCUIT.

Initial operating circuit of a relay which, when completed, starts the operation of the relay.

STARTING CURRENT.

Minimum beam current required to initiate oscillation in a klystron.

STARTING REACTOR.

Reactor for decreasing the starting current of a machine or device.

STARTING VOLTAGE.

Minimum voltage which must be applied to a detector tube to cause it to function, with the particular recording circuit which may be attached.

STARTOVER DATA TRANSFER AND PROCESSING PROGRAM.

Program which controls the transfer of start-over data from the active to the standby machine and their subsequent processing by the standby machine.

STATES OF ALERT FOR INTERCEPTORS AND SURFACE-TO-AIR-WEAPONS.

In air defense operations, a degree of prepared-

ness of interceptors or fire units indicating the time allotted to initiate a scramble or effect an engagement or to come to battle stations. Battle Stations: A degree of preparedness that requires an interceptor or fire unit to be capable of immediately initiating a tactical scramble or an effective engagement. Five Minute Alert: A degree of preparedness that requires an interceptor or fire unit to be capable of accomplishing a tactical scramble or an effective engagement within five minutes of receipt of an alert, warning, or order. 15 - Minute Alert: A degree of preparedness that requires an interceptor or fire unit to be capable of coming to "Battle Station" alert within 15 minutes of receipt of an alert, warning, or order. 30 - Minute Alert: A degree of preparedness that requires an interceptor or fire unit to be capable of coming to "Battle Station" alert within 30 minutes of receipt of an alert, warning, or order. One - Hour Alert: A degree of preparedness that requires an interceptor or fire unit to be capable of coming to "Battle Station" alert within one hour of receipt of an alert, warning, or order. Three-Hour Alert: A degree of preparedness that requires an interceptor or fire unit to be capable of coming to "Battle Station" alert within three hours of receipt of an alert, warning, or order. Released: A status that indicates that an interceptor or fire unit has been released from an air-defense commitment.

STATES OF PREPAREDNESS.

Degree of preparedness of air-defense organizations under which the units are capable of performing prescribed air-defense activities and functions. Normal Preparedness: A degree of preparedness specified in current operations orders whereby measures are taken to provide sustained air-defense potential. Increased Readiness: Any degree of preparedness greater than Normal Preparedness but less than Air-Defense Readiness whereby measures are instituted to provide increased air-defense potential against any unknown or doubtful threat. Air-Defense Readiness: The maximum degree of preparedness whereby all available forces are placed in a state

of immediate combat readiness for relatively short periods of time.

STATIC.

1. Interference caused by natural electrical disturbances in the atmosphere, or the electromagnetic phenomena capable of causing such interference.
2. Noise heard in a radio receiver caused by electrical disturbances in the atmosphere, such as lightning, northern lights, etc.
3. Fixed, nonvarying condition.

STATIC CHARACTERISTICS.

Characteristics of a tube taken with no output load and with dc potentials applied to the grid and plate.

STATIC CHARGE.

Electric charge accumulated on an object.

STATIC DIRECTION FINDER.

Apparatus for locating storm areas, consisting basically of a cathode-ray indicating tube similar to those used in radar and television and two mutually perpendicular receiving loops and amplifiers.

STATIC ELECTRICITY.

Electricity in the form of a charge in equilibrium, or considered independently of the effects of its motion.

STATIC ELIMINATOR.

Device intended to reduce the effect of atmospheric static interference in a radio receiver. As yet, no device has been found that will eliminate static completely without impairing the reception of the desired signal.

STATIC FIRING.

Test of a rocket motor on the ground.

STATIC LEVEL.

(Reference: NOISE LEVEL.)

STATIC MACHINE.

Machine for generating electric charges, usually by electric induction.

STATIC PRESSURE.

Pressure that would exist in the medium with no sound waves present. The unit of measurement is the dyne per square centimeter.

STATIC REGULATOR.

Transmission regulator in which the adjusting mechanism is in self-equilibrium at any setting and requires control power to change the setting.

STATIC SENSITIVITY.

Quotient of the direct anode current by the incident radiant flux of constant value.

STATICIZER.

Storage device in an electronic computer for converting time sequential information into static parallel information.

STATICS.

Branch of dynamics that deals with bodies at rest relative to some given frame of reference and with the interaction of forces between them.

STATION.

1. Separate transmitter or receiver or a combination of transmitters and receivers including the accessory equipment required for carrying on a definite radio communication service. The station assumes the classification of the service in which it operates permanently or temporarily.
2. Subscribers instrument (telephone).

AERODROME CONTROL RADIO. Radio station providing communication between an aerodrome control tower and aircraft or mobile aeronautical radio stations.

AERONAUTICAL. Land station in the aeronautical mobile service, carrying on a service with aircraft stations. (In certain instances, an aeronautical station may be placed on board a ship.)

AERONAUTICAL BROADCAST. Aeronautical station which makes broadcasts of meteorological information and notices to airmen.

AERONAUTICAL FIXED. Station in the aeronautical fixed service.

AERONAUTICAL GROUND. Radio station operated for the purpose of providing air-to-ground communication in connection with the operation of aircraft.

AERONAUTICAL MARKER BEACON. Radio navigation land station in the aeronautical radio navigation service which provides a signal to designate a small area above the station. (In certain instances an aeronautical marker beacon station may be placed on board a ship.)

AERONAUTICAL RADIO. Land station carrying on a service with aircraft stations.

AERONAUTICAL RADIO BEACON. Radio navigation land station in the aeronautical radio navigation service, the emissions of which are intended to enable aircraft, or other mobile service, to determine its bearing or its direction in relation to the aeronautical radio beacon station.

AIRCRAFT. Mobile station installed on board any type of aircraft and continuously subject to human control.

AIRPORT CONTROL. Furnishes communications limited to actual aviation needs between an airport control tower and aircraft in the immediate vicinity.

AIR GROUND CONTROL RADIO. Aeronautical telecommunication station having primary responsibility for handling communications pertaining to the operation and control of aircraft in a given area.

AIRWAYS. Ground communication installation, established, manned, and equipped to communicate with aircraft in flight as well as with other designated airways installation for the purpose of expeditious and safe movement of aircraft.

ALTIMETER. Radio navigation mobile station in the aeronautical radio navigation service, the emissions of which are intended to determine the altitude of aircraft aboard which the altimeter station is located above the earth's surface.

AMATEUR. 1. Radio station owned and operated by an amateur for personal two-way communication with other amateurs, and licensed accordingly by the FCC or by corresponding authorities in other countries.

2. Station in the amateur service.

AMATEUR PORTABLE. Amateur station that may conveniently be moved about from place to place, but is not operated while in motion.

AMATEUR PORTABLE-MOBILE. Amateur station that may be conveniently transferred to or from a mobile unit and is ordinarily used while such mobile unit is in motion.

ASTRONOMIC. Point on the earth at which observations are made on heavenly bodies to determine latitude, longitude, or azimuth.

BASE. Land station in the land mobile service carrying a service with land mobile stations. (A base station may secondarily communicate with other base stations incident to communication with land mobile stations.)

BROADCASTING. Station in the broadcasting service.

COAST. Land station in the maritime mobile service carrying on a service with ship stations. (A coast station may secondarily communicate with other coast stations incident to communication with ship stations.)

EXPERIMENTAL. Station utilizing electromagnetic waves between 10 KC per second and 3,000,000 MC per second in experiments with a view to the development of science or technique. This definition does not include amateur stations.

FIXED. Station in the fixed service. (A fixed station may, as a secondary service, transmit to mobile stations on its normal frequencies.

FLIGHT TEST. Aeronautical station used for the transmission of essential communications in connection with the test of aircraft or major components of aircraft.

GLIDE PATH/SLOPE. Radio navigation land station in the aeronautical radio navigation

service which provides vertical guidance in connection with an instrument landing system. (In certain instances, a glide path/slope station may be placed on board a ship.)

HYDROLOGICAL AND METEOROLOGICAL

FIXED. Fixed station, the emissions of which are used for the automatic transmission of either hydrological or meteorological data, or both.

HYDROLOGICAL AND METEOROLOGICAL

LAND. Land station, the emissions of which are used for the automatic transmission of either hydrological or meteorological data, or both.

HYDROLOGICAL AND METEOROLOGICAL

MOBILE. Mobile station, the emissions of which are used for the automatic transmission of either hydrological or meteorological data, or both.

LAND. Station in the mobile service not intended for operation while in motion. (A land station may communicate, on a secondary basis, with fixed stations or other land stations of the same category.)

LAND MOBILE. Mobile station in the land mobile service capable of surface movement within the geographical limits of a country or continent.

LOCALIZER. Radio navigation land station in the aeronautical radio navigation service which provides signals for the lateral guidance of aircraft with respect to a runway center line.

LORAN. Long distance radio navigation land station transmitting synchronized pulses. Hyperbolic lines of position are determined by the measurement of the difference in the time of arrival of these pulses.

MARINE BROADCAST. Coast station which makes scheduled broadcasts of time, meteorological and hydrographic information.

MARINE RADIO BEACON. Radio navigational land station, the emissions of which are in-

tended to enable a ship's station to determine its bearing or its direction in relation to the marine radio beacon station.

METEOROLOGICAL RADAR. Station in the meteorological aid service employing radar.

MOBILE. Station in the mobile service intended to be used while in motion or during halts at unspecified points.

OMNIDIRECTIONAL RANGE. Radio navigation land station in the aeronautical radio navigation service providing direct indication of the bearing of that station from an aircraft.

RACON. Radio navigation land station which employs a racon. (In certain instances a racon station may be placed on board a ship or aircraft.)

RADIO BEACON. Radio navigation station, the emissions of which are intended to enable a mobile station to determine its bearing or its direction in relation to the radio beacon station.

RADIO DIRECTION-FINDING. Radiolocation station intended to determine only the direction of other stations by means of transmission from the latter.

RADIO NAVIGATION. Station in the radio navigation service.

RADIO NAVIGATION LAND. Station in the radio navigation service not intended for operation while in motion.

RADIO NAVIGATION MOBILE. Station in the radio navigation service intended to be used while in motion or during halts at unspecified points.

RADIO POSITIONING LAND. Station in the radiolocation service other than a radio navigation station not intended for operation while in motion.

RADIO POSITIONING MOBILE. Station in the radiolocation service other than a radio navigation station intended to be used while in motion or during halts at unspecified points.

RADIO RANGE. Radio navigation land station in the aeronautical radio navigation service providing radio equi-signal zones. A radio range station may be placed on board a ship.

RADIOLOCATION. Station in the radiolocation service.

RADIOSONDE. Station in the meteorological aid service employing radiosonde.

SHIP. Mobile station in the maritime mobile service located on board a vessel which is not permanently moored.

STANDARD FREQUENCY. Station in the standard frequency service.

SURVEILLANCE RADAR. Radio navigation land station in the aeronautical radio navigation service employing radar to display the presence of aircraft within its range. (In certain instances a surveillance radar station may be placed on board a ship.)

TRIBUTARY. (Reference: TRIBUTARY STATION.)

STATION ANGLE.

Angle formed between lines drawn from the target to each of two Shoran ground stations.

STATION AUTHENTICATION.

Security measure designed to establish the authenticity of a transmitting or receiving station.

STATION CIRCLE.

Great circle on the earth's surface passing through two synchronized transmitters.

STATION LICENSE.

License issued by the Federal Communications Commission authorizing construction and operation of a radio station under specified conditions.

STATION LOG.

Chronological record of station events including entries relating to message handling, equipment difficulties, personnel, etc.

STATION RINGER.

AC electric bell or similar device associated with a telephone station for indicating a telephone call to the station.

STATION SERIAL NUMBER.

Message reference number assigned within a Communication/Signal Center.

STATION-TO-STATION CALL.

Telephone call in which the calling party does not specify that he wishes to reach a particular person or private-branch-exchange extension at the called point. A station-to-station call is chargeable from the time anyone at the called number answers.

STATIONARY BATTERY.

Storage battery designed for service in a permanent location.

STATIONARY FIELD.

Field in which the scalar (or vector) at any point does not change during the time interval under consideration (constant field).

STATIONARY WAVE.

1. Wavelike distribution of potential along a conductor when electric waves are reflected from the end of the conductor to form stationary nodes and loops.

2. Condition of equilibrium or zero motion at certain lines, points or surfaces called nodes, with regions of vibration between, produced by interference between similar wave trains traveling in opposite directions.

STATOR.

1. Portion of machine which contains the stationary parts of the magnetic circuit with their associated windings.

2. Fixed or nonmoving part of a variable capacitor.

STATOR PLATES.

Fixed plates of a variable capacitor. They are generally insulated from the frame of the capacitor.

STATUS.

Past, present, or future state of effectiveness of a publication.

STAUROSCOPE.

Device used for measuring with some accuracy the position of extinction (Z direction) in partly oriented X-sections, AT or BT bars cut from sections of crystals. Less accurate than the Bertrans plate or Wright Biquartz wedge accessories.

STC (SUBTERRANEAN CABLE).

Cable designed for use underground.

STC (SYSTEM TECHNICAL CENTER).

Branch within each Direction Center and Combat Center responsible for providing liaison between operations and maintenance personnel and coordinating the activities of the various maintenance agencies to insure effective operation of the equipment associated with the SAGE Center. It is manned by a System Technical Coordinator and System Technical Coordinator Technician(s).

STCO (SYSTEM TECHNICAL COORDINATOR).

Officer in the SAGE Center specialized in radio, radar, wire communications, and computer operation. The Coordinator is responsible for proper functioning of such equipment within his sector or division.

STCT (SYSTEM TECHNICAL COORDINATOR TECHNICAL).

Noncommissioned officer in a SAGE Center who assists the system technical coordinator.

STEADY STATE.

Condition in which circuit values remain essentially constant, occurring after all initial transients or fluctuating conditions have settled down.

STEATITE.

Mineral consisting chiefly of a silicate of magnesium having excellent insulating properties even at high frequencies and used extensively for insulators.

STEER.

In air defense operations, an instruction from

an Intercept Director to an interceptor to guide it on a specified heading to an air base.

STEERABLE ANTENNA.

Directional antenna whose major lobe can be readily shifted in direction.

STEFAN-BOLTZMANN LAW.

Emitted radiant energy per unit of a black body is proportional to the fourth power of its absolute temperature.

STEINMETZ COEFFICIENT.

Factor by which the 1.6th power of the magnetic flux density must be multiplied to give the approximate hysteresis loss of an iron or steel sample in ergs per cubic centimeter per cycle when that sample is undergoing successive magnetization cycles having that value of flux density as a maximum.

STEINMETZ FORMULA.

Empirical formula (created by experiment) for the magnetic hysteresis loss per unit volume per cycle: $w = aB_m^{1.6}$, when a is the Steinmetz coefficient and B_m is the maximum induction during the cycle. It is used in the design of power transformers.

STELLITE.

Tungsten alloy sometimes used for the tip of a cutting stylus for a sound recorder.

STENAFAX.

Machine developed and manufactured by Times Facsimile Corp. for electronically making mimeograph stencils, offset plates and single copy reproduction.

STENCIL.

Thin plate of metal or other material punched with a pattern which is reproduced on other surfaces by laying the stencil on them and applying color over the pattern.

STENCIL RECORDING.

Process in which a facsimile record sheet is used as a mimeograph stencil.

STENODE CIRCUIT.

Superheterodyne receiving circuit in which a piezoelectric unit is used in the intermediate frequency amplifier to balance out all frequencies

except signals at the crystal frequency, thereby giving very high selectivity.

STEP.

1. Range mark offset on type M presentation.
2. In telephone, the movement of a wiper from one bank level to another (vertical step), or from one contact to another in a dialed or selected-level (row) of fixed bank contacts (rotary step).

STEP STROBE MARKER.

Form of strobe marker in which the discontinuity is in the form of a step in the time base.

STEP TABLET.

In facsimile a test chart consisting of a series of areas. The density of the areas increases from a low value to a maximum value in steps. (Reference: DENSITY STEP TABLET.)

STEP VOLTAGE REGULATOR.

Device consisting of a regulating transformer and means for adjusting the voltage or the phase relation of the system circuit in steps, usually without interrupting the load.

STEP-BACK RELAY.

Relay which operates to limit the current peaks of a motor when the armature or line current increases. A step-back relay may, in addition, operate to remove such limitation when the cause of the high current has been removed.

STEP-BY-STEP AUTOMATIC TELEPHONE SYSTEM.

Switching system characterized by the use of successive step-by-step selector switches actuated by current impulses produced by rotation of a telephone dial. The selectors are electromagnetically operated and contain a number of tiers of fixed contacts with each tier arranged in a semicircle. A moving contact arm first rises to the height of the desired tier, then swings around horizontally and stops over the required contact.

STEP-BY-STEP DIAL SYSTEM.

Automatic telephone switching system which is generally characterized by the following features:

1. Selecting mechanisms are step-by-step switches.

2. Switching pulses may either actuate the successive selecting mechanism directly or may be received and stored by controlling mechanism directly or may be received and stored by controlling mechanisms by pulses similar to dial pulses.

STEP-BY-STEP SWITCH.

Bank-and-wiper switch in which the wipers are moved by electromagnet ratchet mechanisms individual to each switch.

STEP-BY-STEP SYSTEM.

1. Automatic telephone switching system which is generally characterized by the following features: a. the selecting mechanisms are step-by-step switches: b. Switching pulses may either actuate the successive selecting mechanisms directly or may be received and stored by controlling mechanism which, in turn, actuate the selecting mechanisms.

2. Dial switching equipment that utilizes switches which mechanically step as a result of receiving pulses originated by the subset dial. Sometimes called "Strowger System" or "Stepper Equipment". Switching motion is in a vertical direction to select a bank level and in a horizontal position to select a particular bank level and in a horizontal position to select a particular bank terminal on that level. "XY" System is the trade name of a step-by-step system which utilizes switches that step over in a horizontal plane from left to right to select a bank level, and from front to back in the same plane to select a specific terminal. The motion is first in the direction of the "X" and then in the direction of the "Y" coordinate resulting in the name "XY".

STEP-CONTROL.

"Pacing" control to insure proper operating speeds of transmitter-distributors of tape repeater bank.

STEP-DOWN TRANSFORMER.

Transformer in which the energy transfer is from a high-voltage winding to a low-voltage winding or windings.

STEP-UP TRANSFORMER.

Transformer in which the energy transfer is from a low-voltage winding to a high-voltage winding or windings.

STEPPING MECHANISM.

Shaft and wiper assembly of a single-motion or two motion stepping switch and the mechanical apparatus needed to move (Step) the shaft and wipers.

STEREOPHON SYSTEM.

German system for sound recording on film. Developed by a German physicist, Dr. Carlheinz in 1938. This system is reported as having the important advantage of giving excellent three channel reproduction of dynamic range and low noise level with the use of sound track having a total width of only 2.65 MM. It has a signal frequency range of 23 to 10,000 cycles and a dynamic range of 60 decibels without resort to expansion and compression.

STEREOPHONIC RECEPTION.

Reception involving the use of two receivers having a phase difference in their reproduced sounds, to give a sense of direction to the received program analogous to the impression of depth obtained in stereoscopic vision.

STEREOPHONIC SYSTEM.

Sound reproducing system in which a plurality of microphones, transmission channels, and loudspeakers (or earphones) are arranged so as to afford a listener a sense of the spatial distribution of the sound sources.

STEREOSCOPE.

Optical instrument designed to give a mental impression of a three dimensional scene through a viewing of two properly prepared pictures or photographs.

STEREOSCOPIC.

Having a three dimensional character.

STEREOTYPE.

Word, phrase, number, abbreviation, etc., which, as a result of frequent use, may be suspected of appearing in a particular encrypted message.

STERILAMP.

Ultraviolet lamp used for destroying bacteria.

STIFFNESS FACTOR.

Angular lag between input and output of a servo system.

STILB.

Unit of brightness equal to one candle per square centimeter.

STITCHES AND KNOTS.

For sewing unsupported cables; also used on cable racks.

CHICAGO TIE. Used for sewing one or more cables run parallel to the support.

HAWTHORNE KNOT. Used for ending Kansas City Stitch.

KANSAS CITY STITCH. Made as a continuation of starting stitch and used for sewing cables on racks; also used at frames.

STARTING STITCH. Used to secure the sewing twine to the cable rack before lacing.

STOCK CONTROL LEVEL.

Stockage objective plus the quantity of supplies required for issue during the "pipeline time."

STK NO. (STOCK NUMBER).

Number used to identify items of supply, and for stocklisting.

STOCK PILE.

1. Stock of materials (strategic or critical) stored and maintained for use in times of emergency.
2. The quantities of supplies on hand, ready for issue to meet demands.

STOCKAGE OBJECTIVE.

Maximum quantities of material to be maintained on hand to sustain current operations. It will consist of the sum of stocks represented by the operating level and the safety level.

STOKES' LAW.

Wave length of luminescence excited by radiation is always greater than that of the exciting radiation. The law has some exceptions.

STOP.

1. Aperture or useful opening of a lens, usually adjustable by means of a diaphragm.
2. Cease operation or motion.

STOPPING CAPACITOR.

Capacitor connected in series which introduces a comparatively high impedance for limiting the current flow of low-frequency alternating current or direct current without materially affecting the flow of high-frequency alternating current. (Reference: BLOCKING CAPACITOR.)

STOPPING POTENTIAL.

Voltage required to stop the outward movement of electrons emitted by photoelectric or thermionic action.

STORAGE.

1. Act of storing information in electronic computers. (Reference: STORE.)
2. Device in which information can be stored, sometimes called a memory device.
3. In a computer, a section used primarily for storing information. Such a section is sometimes called a memory of a store (British).

Note. The physical means of storing information may be electrostatic, ferroelectric, magnetic, acoustic, optical, chemical, electronic, electrical, mechanical, etc., in nature.

STORAGE BATTERY.

Connected group of two or more storage cells. (Common usage permits this term to be applied to a single cell used independently.)

STORAGE CAMERA.

Electronic television pickup, in which the picture is projected optically on the mosaic electrode of a cathode-ray tube and is scanned by an electron beam to convert the optical image into corresponding electrical impulses. (Reference: IC-ONOSCOPE.)

STORAGE CAPACITY.

Amount of information that can be retained in a storage (or memory) device, often expressed as the number of words that can be retained (given the number of digits, and the base, of the standard word). When comparisons are made among devices using different bases and work lengths, it is customary to express the capacity in bits. This number is obtained by taking the logarithm to the base two of the number of distinguishable states in which the storage can exist. Note. The "storage (or memory) capacity of a computer" usually refers only to the principal internal storage section.

STORAGE CELL.

Electrolytic cell for the generation of electric energy in which the cell, after being discharged, may be restored to a charged condition by an electric current flowing in a direction opposite to the flow of current when the cell discharges.

STORAGE TUBE.

Cathode-ray tube having a special screen used to integrate signals or to store them for subsequent scanning.

STORAGE UNIT.

Device in which information can be recorded.

STORE.

1. Information retained in a device from which it can later be withdrawn.
2. Information introduced into such a device.

STORE TRANSMISSION BRIDGE.

Transmission bridge, which consists of four identical impedance coils (the two windings of the back-bridge relay and live relay of a connector, respectively) separated by two capacitors, which couples the calling and called telephones together electrostatically for the transmission of voice-frequency (alternating) currents, but separates the two lines for the transmission of direct current for talking purposes (talking current).

STORM GUYS.

Opposing messenger cable and attachments placed at predetermined intervals along a pole line to increase its stability during storms.

STORM LOAD.

Combined stresses imposed upon an open wire pole line by the simultaneous occurrence of low temperature, a cross wind, and a coating of ice on the individual wires.

STORM LOADING.

Mechanical loading imposed upon the components of a pole line by the elements; that is, wind and/or ice, combined with the weight of the components of the line.

STOW.

1. Locking of antenna to prevent rotation while servicing or in transit.
2. To secure in a specified storage area.

STRAIGHT FORWARD TRUNKING.

Toll telephone trunking method whereby the calling operator plugs into an idle trunk, receives a tone back when the called operator has answered, and then passes the called number and the called operator completes the connection.

STRAIGHT JOINT.

Joint used for connecting two lengths of cable in approximately the same straight line in series.

STRAIGHT MULTIPLING.

Connection, in telephone, of the 10-contact sets in a particular bank level of a given switch shelf to corresponding contact sets in the same level of another switch shelf or shelves.

STRAIGHT-FORWARD.

Automatic one-way signaling.

STRAIGHT-FORWARD CIRCUIT.

Circuit in which signaling is automatic and in one direction.

STRAIGHT-IN-APPROACH.

Aircraft landing approach without circling or flying a pattern.

STRAIGHT-LINE CAPACITANCE.

Variable capacitor characteristic obtained when the rotor plates are so shaped that the capacitance varies directly in proportion to the angle of rotation.

STRAIGHT-LINE FREQUENCY.

Variable capacitor characteristic obtained when the rotor plates are so shaped that the resonant frequency of the tuned circuit containing the capacitor varies directly in proportion to the angle of rotation.

STRAIGHT-LINE WAVELENGTH.

Variable capacitor characteristic obtained when the rotor plates are so shaped that the wavelength of resonance in the tuned circuit containing the capacitor varies directly in proportion to the angle of rotation.

STRAIN.

Change of shape, size, or form that is caused to take place in a substance by forces that are applied.

STRAIN GAGE.

Instrument designed to be attached to a member in which strain is to be measured. Usually connected into a bridge circuit that feeds a recorder either directly or through an amplifier. Three types in common use are electric, electromagnetic, and resistance strain gages.

STRAIN INSULATOR.

Single insulator, an insulator string, or two or more strings in parallel, designed to transmit to the tower or either support the entire pull of the conductor and to insulate it therefrom.

STRAND.

1. One of the wires, or groups of wires, of any stranded conductor.
2. Steel stranded wire used to support poles or aerial cable.

STRAND PULLER.

Wire grip or clamp. Normally used between a suspension strand and a capping hoist.

STRANDED CONDUCTOR.

Conductor made up of a group of wires twisted or braided together.

STRAP.

Wire or strip connection between the end of the segments of the anode of a cavity magnetron to promote operation in the desired mode.

STRATEGIC AIR WARFARE.

Air combat and supporting operations designed to effect, through the systematic application of force to a selected series of vital targets, the progressive destruction and disintegration of the enemy's war-making capacity to a point where he no longer retains the ability or the will to wage war. Vital targets may include key manufacturing systems, sources of raw material, critical material, stockpiles, power systems, transportation systems, communication facilities, concentrations of uncommitted elements of enemy armed forces, key agricultural areas, and other such target systems.

STRATEGIC INTELLIGENCE.

Knowledge, pertaining to the capabilities and vulnerabilities of foreign nations, which is required by national planners for the formation of an adequate national defense in time of peace and forms the basis for projected military operations in time of war.

STRATEGIC MAP.

Map of medium scale, or smaller, used for planning of operations including the movement, concentration, and supply of troops.

STRATEGIC MATERIALS.

Materials vital to the security of a nation which must be procured entirely or to a substantial degree from sources outside the continental limits of that nation because the domestic production will not be sufficient in quantity or quality to meet requirements in time of national emergency.

STRATEGIC MISSILE.

Guided missile employed in the Air Force strategic mission. Strategic missiles will be designated with the prefix "SM" followed by a numerical designator. Example: SM—.

STRATEGIC MISSION.

Mission directed against one or more of a selected series of enemy targets with the purpose of progressive destruction and disintegration of the enemy's warmaking capacity and his will to make war. Targets include key manufacturing systems, sources of raw material, critical material, stockpiles, power systems, transportation

systems, communication facilities and other such target systems. As opposed to tactical operations, strategic operations are designed to have a long range, rather than immediate, effect on the enemy and his military forces.

STRATEGIC PLAN.

Plan for the overall conduct of a war.

STRATEGIC RESERVE.

Quantity of material which is placed in a particular geographic location due to strategic considerations or in anticipation of major interruptions in the supply distribution system. It is over and above the stockage objective.

STRATEGY.

Art and science of developing and using the political, economic, psychological, and military forces of a nation, during peace and during war, to afford the maximum support to national policies in order to increase the probabilities and favorable consequences of victory and to lessen the chances of defeat.

STRATO. (STRATOSPHERE).

1. Upper region or external layer of the atmosphere, in which the temperature is practically constant in a vertical direction. The stratosphere is free from clouds (except occasional dust clouds and from strong vertical air currents, in other words, active convection. The height of its base varies in regular fashion with latitude and with the seasons over the earth as a whole and fluctuates irregularly from day to day over any particular place. About 22 miles high.

2. Part of the Earth's atmosphere directly between troposphere and ionosphere. Starts seven miles up.

STRAY CAPACITANCE.

Capacitance existing between adjacent conductors or wiring. Coupling effects cause it to be detrimental at high frequencies. (Reference: DISTRIBUTED CAPACITANCE.)

STRAY CURRENT.

Portion of the total current which flows through paths other than the intended circuit.

STRAY FIELD.

Leakage magnetic flux that spreads outward from an inductor and does no useful work.

STRAYS.

Electromagnetic disturbances in radio reception other than those produced by radio transmitting systems.

STREAMER.

Metallized long, narrow, strip forming part of a rope.

STRESS.

Applied force producing a strain on a substance.

STRIATION.

1. Parallel system of small ridges and grooves developed upon the surface of the prism faces of quartz during the growth of the crystal. The striations are parallel to X and perpendicular to Y and Z, and are useful for the preliminary orientation of the crystal.

2. Striped appearance of the positive column in a Crookes tube at suitable pressures, consisting of transverse, alternate bright, and dark bands.

STRIKING AN ARC.

Starting an electric arc by touching the electrodes together momentarily.

STRIKING POTENTIAL.

1. Voltage required to start an electric arc.
2. Smallest grid-cathode potential value at which plate current begins flowing in a gas-filled triode.

STRING ELECTROMETER.

Electrostatic voltage-measuring instrument consisting of a conducting fiber stretched midway between two conducting plates parallel to the fiber. The electrostatic field between the plates displaces the fiber laterally in proportion to the voltage between the plates.

STRING GALVANOMETER.

Galvanometer in which current to be measured is sent through a wire located in a strong magnetic field. (Reference: EINTHOVEN STRING GALVANOMETER.)

STRIP COATING.

Weighting placed on chaff dipoles to insure random orientation in free fall.

STRIP, DESIGNATION.

Strip of paper with a transparent covering used to mark the assignment of jacks or other apparatus below it.

STRIP, FANNING.

Wooden detail at the MDF verticals which is bored with holes opposite each protector through which the cable conductors are fanned.

STRIP, STILE CASING.

Vertical detail between the jack panels of a switchboard on which the stile casing number plates are mounted.

STRIPE COATING.

Coating of specially loaded lacquer which is designed to impart random polarization to chaff elements.

STROBE.

1. Intensified spot in the sweep of a deflection type indicator, used as a reference mark for ranging or expanding the presentation.
2. Intensified sweep on a PPI or B-scope. Such a strobe may result from certain types of interference or it may be purposely applied as a bearing or heading marker.

STROBE MARKER.

Small bright spot, a short gap, or other discontinuity, produced on the line trace of a radar display to indicate that part of the time base which is receiving attention.

STROBE PULSE.

Pulse of duration less than the time period of a recurrent phenomenon used for making a close investigation of that phenomenon. The frequency of the strobe pulse bears a simple relation to that of the phenomenon and the relative timing is usually adjustable.

STROBING JAMMING.

Classified definition. (Reference: AFM 100-50.)

STROBOGLOW.

Stroboscope employing a neon tube energized at a controllable rate by a vacuum-tube oscillator to produce the desired intermittent illumination.

STROBOSCOPE.

Instrument that creates the optical illusion of slowing down or stopping motion of an object by illuminating it with flashes of intense light at regular intervals.

STROBOSCOPIC DIRECTION FINDER.

One employing a continuously rotating antenna system, feeding neon tubes through amplifiers in such a way that a calibrated disk is illuminated momentarily at the position corresponding to the bearing of the received signal.

STROBOSCOPIC PATTERN WHEEL.

Printed disk having a number of rings, each with a different number of dark segments. When the pattern is placed on a rotating shaft and illuminated at a known frequency by a flashing discharge tube, the speed can readily be determined by noting which pattern appears to stand still or rotate slowly.

STROBOSCOPIC TACHOMETER.

Stroboscope having a scale that reads in flashes per minute or in revolutions per minute. The speed of a rotating device is measured by directing the stroboscopic lamp on the device, adjusting the flashing rate until the device appears to be stationary, then reading the speed directly on the scale of the instrument.

STROBOTRON.

Type of glow lamp used to produce intensely bright flashes of light when fed with accurately timed voltage pulses. Used in electronic stroboscope for visual inspection of high-speed moving parts.

STROKE.

Number of scanning lines per minute in facsimile. (Reference: DRUM SPEED.)

STRONTIUM.

Metallic element used in cathodes of phototubes to obtain maximum response to ultraviolet radiation.

STUB.

Short length of transmission line or cable which is joined as a branch to another transmission line or cable.

STUB ANGLE.

Right-angle elbow for the coaxial RF transmission line which has the inner conductor supported by a quarter-wave stub.

STUB CABLE.

Short branch off of a principal cable. The end is often sealed until it is used at a later date. Pairs in the stub are referred to as stubbed out pairs.

STUB POLE.

1. Pole which, through a messenger and attachments, receives a transferred stress or load from another pole usually over roads or obstacles.
2. Pole to which the weight of another pole is transferred by bolting or fastening tightly together used to reinforce poles that have decayed beneath the ground.

STUB SUPPORT.

Stub used for mechanical support and producing the minimum electrical disturbance.

STUB TUNER.

Stub which is terminated by movable short-circuiting means and used for matching impedance in the line to which it is joined as a branch.

STUB-SUPPORTED COAXIAL.

Coaxial whose inner conductor is supported by means of short-circuited coaxial stubs.

STUTTER.

Series of undesired black and white lines sometimes produced when the facsimile signal undergoes a sharp amplitude change.

STYLUS.

1. Specially shaped needle used in a sound recorder to cut or emboss the record grooves. Generally made of sapphire, stellite, or steel. The plural is styli.
2. Single pointed element which contacts the record sheet in a facsimile recording system.

STYLUS DRAG.

Expression used to denote the effect of the friction between the record surface and the reproducing stylus.

STYLUS FORCE.

Effective weight of reproducer or force in a vertical direction on stylus when it is in operating position.

STYLUS WEIGHT.

Actually stylus force.

SUB (SUBMARINE).

1. Submarine torpedo boat.
2. Pertaining to various underwater mines, anti-submarine nets etc.

SUB-CARRIER FREQUENCY MODULATION.

Term formerly used to describe sub-carrier frequency shift or signals on a radio circuit or audio frequency shift for the signal itself.

SUB-CARRIER FREQUENCY SHIFT.

System of transmission in which an audio-frequency shift signal is used to modulate a radio transmitter.

SUB-STD (SUBSTITUTE STANDARD).

Type classification of equipment. An item which is not as satisfactory as a standard item, but which is a usable substitute and is available for use or procurement in place of the standard item.

SUBASSEMBLY.

Group of parts and components combined into a unit for convenience in assembling or servicing equipments. A subassembly is part of an operating unit, but is not complete in itself.

SUBATOMIC.

Smaller in size than atoms, as electrons or protons.

SUBATOMIC PARTICLES.

Particles that make up the atom, e.g., proton, electron, neutron, etc.

SUBCARRIER.

1. Carrier that is modulated and then applied as modulation on a second carrier.

2. Carrier which is applied as a modulating wave to modulate another carrier.

3. (Reference: CHROMINANCE SUBCARRIER.)

SUBCARRIER.

Intermediate wave modulated by the facsimile signals and in turn used to modulate the main carrier, either alone or in conjunction with subcarriers on other channels.

Note. Its frequency is usually low relative to that of the main carrier.

SUBCYCLE GENERATOR.

Frequency reducing device used in telephone equipment which furnishes ringing power at a submultiple of the power supply frequency.

SUBDIVIDED CAPACITOR.

Capacitor in which several capacitors known as sections are so mounted that they may be used individually or in combination.

SUBHARMONIC.

Sinusoidal quantity having a frequency which is in integral submultiple of the fundamental frequency of a periodic quantity to which it is related. For example, a wave, the frequency of which is half the fundamental frequency of another wave, is called the second subharmonic of that wave.

SUBJECT COPY.

Material in graphic form which is to be transmitted for facsimile reproduction by the recorder. (Reference: COPY.)

SUBMARINE.

1. Submarine torpedo boat.
2. Pertaining to various underwater mines, anti-submarine nets, etc.

SUBMARINE CABLE.

Cable designed for service under water; usually a lead-covered cable with a steel armor applied between layers of jute.

SUBMERSIBLE.

Constructed so that it will operate successfully when submerged in water under specified conditions of pressure and time.

SUBMINIATURE TUBES.

Electron tubes of small size.

SUBMULTIPLE RESONANCE.

Resonance at a frequency that is a submultiple of the frequency of the exciting impulses.

SUBOR (SUBORDINATE).

Under the control of another; lower in the chain of command.

SUBROUTINE.

1. Portion that causes an electronic computer to carry out a well-defined mathematical or logical operation.

2. Routine which is arranged so that control may be transferred to it from a master routine and so that, at the conclusion of the subroutine, control reverts to the master routine. Such a subroutine is usually called a closed subroutine with respect to another routine and a master routine with respect to a third. Usually, control is transferred to a single subroutine from more than one place in the master routine and the reason for using the subroutine is to avoid having to repeat the same sequence of instructions in different places in the master routine.

SUBSCRIBER.

Person or organization to which telephone or teletype service is extended.

SUBSCRIBER LINE.

Line between central office and subset.

SUBSCRIBER MULTIPLE.

Bank of jacks in a manual switchboard providing outgoing access to subscriber lines, and usually having more than one appearance across the face of the switchboard.

SUBSCRIBER SET.

Assembly of apparatus for use in originating or receiving calls on the premises of a subscriber to a communication or signaling service.

SUBSCRIBER'S DROP.

Line from a cable termination to a subscriber's location.

SUBSCRIBER'S EQUIPMENT

Subscriber's equipment is that portion of a system installed in the protected signaling premises or otherwise supervised.

SUBSET.

Complete telephone equipment including handset, ringer and other associated parts located at a subscriber station, exclusive of protective equipment.

SUBSIDIARY CONDUIT.

Terminating branch of a underground conduit run extending from a manhole or handhole to a nearby building, handhole, or pole.

SUBSOLAR POINT.

Point on the earth's surface which is cut by a line from the center of the earth to the sun.

SUBSONIC VELOCITY.

Velocity less than that of sound.

SUBSTATION.

Building or outdoor location at which electric energy in a power system is transformed, converted, or controlled.

SUBSTITUTE STANDARD.

Type classification of equipment. An item which is not as satisfactory as a standard item, but which is a usable substitute and is available for use or procurement in place of the standard item.

SUBSTITUTION METHOD.

Method of measuring an unknown quantity in a circuit by first measuring or observing some circuit effect dependent on that quantity, then substituting in the circuit a similar but measurable value and adjusting it to produce a like effect. The unknown value is then assumed to be equal to the adjusted known value.

SUBSTITUTION SYSTEM.

System in which arbitrary symbols are substituted for the plain-text symbols in order to form a cryptogram.

SUBSYNCHRONOUS.

Having a frequency that is a submultiple of the driving frequency.

SUBSYNCHRONOUS RELUCTANCE MOTOR.

Form of reluctance motor, which has the number of salient poles greater than the number of electrical poles of the primary winding, thus causing the motor to operate at a constant average speed, which is a submultiple of its apparent synchronous speed.

SUBTERRANEAN CABLE.

Cable designed for use underground.

SUBTRACTOR.

Number or series of numbers or alphabetical intervals from which code, cipher or plain text is subtracted for encipherment or decipherment.

SUBWAY-TYPE TRANSFORMER.

Transformer of submersible construction.

SUDDEN IONOSPHERIC DISTURBANCES.

Sudden increase of ionization density in low parts of the ionosphere, caused by a bright solar chromospheric eruption. It gives rise to a sudden increase of absorption in radio waves propagated through the low parts of the ionosphere, and sometimes to simultaneous disturbances of terrestrial magnetism and earth current. The change takes place within a few minutes, and conditions usually return to normal within a few hours.

SUM (SURFACE-TO-UNDERWATER MISSILE).

Missile designed for use against underwater targets such as submarines. It is launched from a surface installation, either fixed or mobile.

SUMMATION TONE.

Combination tone, heard under certain circumstances, whose pitch corresponds to a frequency equal to the sum of the frequencies of the two components.

SUNSEEKER.

Two-axis device actuated by servos and controlled by photocells to keep instruments pointed toward the sun despite rolling and tumbling of a rocket vehicle in which the instruments are carried. Used in upper-atmosphere research and may be developed for navigation in space, especially when made sensitive enough to become a star or planet-seeker.

SUNSPOT.

Dark spots on the sun's surface, the larger of

which are visible to the naked eye when viewing the sun through a dark glass. Sunspots appear to be areas of solar activity and are known to affect magnetic phenomena on the earth.

SUNSPOT CYCLE.

Sunspot activity follows a cycle of between 11 and 12 years with an average of 11.1 years between successive minima. The usual cycle shows the variation of the 12-month running average sunspot number plotted against the months.

SUNSPOT NUMBER.

Index of solar activity; expressed as being equal to a constant multiplied by the sum of 10 times the number of sunspot groups and the number of individual spots. The constant depends on the individual observer and his telescope.

SUP (SUPPLY).

1. Source of voltage.
2. Procurement, distribution, maintenance while in storage, and salvage of supplies, including the determination of kind and quantity of supplies.

SUPERAUDIO FREQUENCY.

Frequency above the range of audible sound and hence above approximately 20,000 cycles.

SUPERCONDUCTIVITY.

Certain metals are cooled to a sufficiently low temperature, their resistance drops to a very low value and the conductivity increases correspondingly.

SUPEREMITRON CAMERA.

Modification of the emitron television camera (British) in which greater sensitivity is obtained by separating the function of charge storage from that of photoelectric emission. An optical image is projected on a continuous photosensitive screen, and the electron emission from the back of this screen is focused electromagnetically onto a mosaic screen that is scanned by an electron beam as in the original emitron cathode-ray tube.

SUPERHET.

Popular name for a superheterodyne circuit or a superheterodyne receiver.

SUPERHETERODYNE RECEIVER.

Receiver in which the incoming modulated RF signals are amplified in a preamplifier (in some cases, but not necessarily in all receivers of this type), and then fed into the mixer for conversion into a fixed, lower carrier (frequency called the intermediate frequency of the receiver). The modulated IF signals undergo very high amplification in the IF amplifier stages and are then fed into the detector for demodulation. The resulting audio or video signals are usually further amplified before use.

SUPERHETERODYNE RECEPTION.

Method of receiving radio waves in which the process of heterodyne reception is used to convert the voltage of the received wave into a voltage of an intermediate, but usually superaudible, frequency, which is then detected.

SUPERHIGH FREQUENCY.

Frequency band from 3,000 to 30,000 megacycles. Wavelength: 1 to 10 centimeters.

SUPERHIGH-FREQUENCY BAND.

Radio frequencies in the range from 3,000 megacycles to 30,000 megacycles per second.

SUPERIMPOSED RINGING.

Telephone party-line ringing using a combination of alternating current and direct current of both polarities to provide selective ringing.

SUPERPOSED CIRCUIT.

Additional channel obtained from one or more circuits, normally provided for other channels, in such a manner that all the channels can be used simultaneously without mutual interference.

SUPERPOSED RINGING.

Partyline ringing in which a combination of alternating and direct currents is utilized, the direct currents of both polarities being provided for selective ringing.

SUPERPOSITION THEOREM.

Current that flows at a point in a linear network during simultaneous application of a number of voltages throughout the network is the sum of the component currents at the point that would be caused by the individual voltages acting separately. Likewise, the potential difference between any two points under such conditions is the sum of the component potential difference that would be produced between these two points by the individual voltages acting separately.

SUPERPOWER.

Comparatively large power used by a broadcasting station in its aerial. There are no definite limits between which a station's power is designated as superpower. However, superpower is generally accepted as being sometimes in excess of 10,000 watts.

SUPERREFRACTION.

Abnormally large refraction of radio waves in the lower layers of the atmosphere, leading to abnormal ranges of operation.

SUPERREGENERATION.

1. Form of regenerative amplification, frequently used in radio-receiver detecting circuits, in which oscillations are alternately allowed to build up and are quenched at a superaudible rate.
2. Method used to produce greater regeneration than otherwise possible without the harmful effects of oscillation. (Reference: QUENCH FREQUENCY.)

SUPERREGENERATIVE DETECTOR.

Vacuum-tube detector circuit that oscillates continuously at the frequency being received. The oscillation is broken up or quenched at a frequency slightly above the upper audibility limit of the human ear by a separate oscillator circuit connected between the grid and plate of the tube, to prevent the regeneration from exceeding the maximum useful amount. Advantages are extreme sensitivity, simplicity, and a minimum number of tubes and parts. Disadvantages are broad-

ness of tuning (poor selectivity) and radiation that can cause interference in other receivers. A detector which provides its own means of quenching is called self-quenching; a detector operated in conjunction with a separate supersonic oscillator is called separately quenched.

SUPERREGENERATIVE RECEIVER.

Type of regenerative receiver in which weak periodic oscillations are caused by the use of quench-frequency signal. This quench signal is fed to the receiving tube where it constantly varies the gain of the tube by varying an electrode voltage.

SUPERSEDE.

To take the places of something or some one, as in cases of one regulation being superseded by another. (Reference: CHANGE.)

SUPERSENSITIVE RELAY.

Term sometimes applied to relays that operate on extremely small currents, less than about 250 micro-amperes.

SUPERSNIFFER.

Frequency-modulated 73-CM radar designed to provide "right-left" indication to a pilot-direction indicator or control for an automatic pilot, and for automatic bomb release at very low altitudes. An azimuth gyro control is used to stabilize antennas and provide navigation course information. The set automatically tracks an isolated target. Average RF power is two watts.

SUPERSONIC.

1. Frequency above that of audible sound, hence above 20,000 cycles. (Reference: ULTRASONIC.) Frequencies below audibility (below about 15 cycles) are called infrasonic.

2. Speeds greater than the speed of sound, which travels at the rate of 1087 feet per second at sea level, or 735 MPH.

SUPERSONIC COMMUNICATION.

Communication through water by manually key-

ing the sound output of echo ranging equipment used on ships.

SUPERSONIC LIGHT VALUE.

Heart of the Scopphony system of television, consisting essentially of a quartz crystal placed in the center of a container filled with a liquid such as carbon tetrachloride. The crystal is excited at a high frequency, in the neighborhood of 10 mc, in such a way that compressive waves are set up in the liquid and diffraction grating. In this system, several hundred picture elements are projected simultaneously, whereas in cathode-ray systems only one element is projected at a time.

SUPERSONIC SOUNDING.

System of determining ocean depths by measuring the time interval between the production of a supersonic wave just below the surface of the water and the arrival of the echo reflected from the bottom of the ocean. In modern apparatus, either magnetostriction or piezoelectric units are used for transmitting and receiving the sounds, and electronic equipment is employed to provide a continuous indication of depth, sometimes with a continuous recording.

SUPERSONIC VELOCITY.

Velocity greater than that of sound.

SUPERVISION.

Telephone practices, the process of watching over the condition of a connection at a switchboard in order to determine when subscribers are through using the connection.

SUPERVISOR'S WIRE.

Tape relay operations, a brief transmission between supervisors.

SUPERVISORY CONTROL.

System for the selective control and automatic indication of the operation of remotely located units by electrical means, over a relatively small number of common transmission lines. Carrier current channels on power lines can be used for this purpose.

SUPERVISORY LIGHT.

Signal on grouped cord or trunk circuits to call attention to a particular signal.

SUPERVISORY PILOT CIRCUIT.

Telephone switchboard circuit which lights a supervisory pilot lamp when a telephone station disconnects.

SUPERVISORY RELAY.

Relay controlled by the transmitter current supplied to a subscriber line to receive from the associated station signals that control the actions of operators or switching mechanisms, during a call.

SUPERVISORY SIGNAL.

Signal for attracting the attention of an attendant to a duty in connection with switching apparatus and the like.

SUPPLEMENT.

Separate publication which is related to a basic publication and is prepared for purposes of promulgating additional information or summaries, and may include extracts from the basic publication.

2. Supplement may have a different classification from that of the basic publication, and may not be registered, regardless of whether or not the basic publication is registered.

SUPPLIES.

Items necessary for the equipment, maintenance, and operation of a military command, including food, clothing, equipment, arms, ammunition, fuel, forage, materials, and machinery of all kinds. In Army, Marine Corps, and Air Force usage, for planning and administrative purposes, supplies are divided as follows:

CLASS I. Rations, forage, and most exchange supplies, that are consumed at an approximately uniform daily rate under all conditions.

CLASS II. Clothing, organizational equipment and vehicles, including spare parts for which allowances for initial issue to individuals and organizations are fixed by Tables of Allowances, Tables of Organization and Equipment,

or other appropriate lists or tables, and which are not included in CLASSES II(A), IV, or IV (A).

CLASS II(A). Aviation supplies and equipment for which allowances for initial issue to organizations are prescribed by appropriate tables or allowance lists.

CLASS III. Fuels and lubricants for all purposes except for operating aircraft or for use as ammunition in weapons.

CLASS III(A). Aviation fuels and lubricants.

CLASS IV. Items not otherwise classified and for which initial issue allowances are not prescribed by approved issue tables. Normally such supplies include fortification and construction materials, special machinery and equipment and other special supplies as well as additional quantities of items identical to those authorized for initial issue (CLASS II), such as additional vehicles.

CLASS IV(A). Aviation supplies and equipment for which allowances for initial issue to organizations are not prescribed by appropriate tables or allowance lists, or which require special measures of control.

CLASS V. Ammunition of all types.

CLASS V(A). Aviation ammunition.

EXPENDABLE NONRECOVERABLE. Items whose physical characteristics are such that when used or consumed, or when becoming unserviceable to an extent beyond organizational level maintenance, cannot normally be economically restored to serviceability. Supplies in this category may be returned to stocks only when in a new or serviceable condition. These items are coded "NR" in USAF supply catalogs.

EXPENDABLE SUPPLIES. Articles which are consumed in use, such as ammunition, foot-powder, paint, fuel, forage, cleaning and preserving materials, surgical dressings, drugs,

ing and preserving materials, surgical dress-medicines, and such spare or repair parts as are used to repair or to complete other articles and which thereby lose their identity.

SUPPLY.

1. Source of voltage.
2. Procurement, distribution, maintenance while in storage, and salvage of supplies, including the determination of kind and quantity of supplies.

SUPPORT.

1. Action of a force which aids, protects, complements or sustains another force in accordance with a directive requiring such action.
2. Unit which helps another unit in battle. Aviation, artillery, or naval gunfire may be used as a support for infantry.
3. Part of any unit held back at the beginning of an attack as a reserve.
4. Element of a command that assists, protects, or supplies other forces in combat.

SUPPORT GROUP.

Task group of naval vessels and craft assigned to furnish naval gunfire support in an amphibious operation. Usually, there is one support group for each attack force. The support group may consist of two or more support units.

SUPPORTING ARMS COORDINATION CENTER.

Single location on board an amphibious force flagship (AGC) in which all communication facilities incident to the coordination of fire support of the artillery, air, and naval gunfire are centralized. This is the naval counterpart to the Fire Support Coordination Center utilized by the landing force.

SUPPORTING STRUCTURES.

1. Poles, anchors, guys, underground ducts, conduit, manholes, terminal panel space, etc., incident to the installation, modification, expansion, or rehabilitation of base wire and telephone systems.
2. Supporting base structures of wire and telephone systems are as follows:

Buildings or parts of buildings housing C-E equipment. Internal building items (raceways, ducts, conduit, electrical wiring and outlets) which are an integral part of the building. Telephone poles and guys, and underground cable conduit (when not part of antenna systems).

SUPPRESSED CARRIER.

Term used to designate that type of system which results in the suppression of the carrier frequency from the transmission medium. The intelligence of a carrier wave after modulation is contained in either sideband, and normally only one sideband is transmitted; the other sideband and carrier frequency are suppressed. The intelligence is recovered at the receiving end by inserting a carrier frequency from a local source which, when combined with the incoming signal, produces the original frequencies with which the transmitting carrier was modulated.

SUPPRESSED-CARRIER OPERATION.

Form of carrier transmission in which the carrier wave is suppressed.

SUPPRESSED-CARRIER TRANSMISSION.

Method of communication in which the carrier frequency is suppressed either partially or to the maximum degree possible. One or both of the sidebands may be transmitted.

SUPPRESSED-ZERO INSTRUMENT.

Indicating or recording instrument in which the zero position is beyond the end of the scale.

SUPPRESSION.

1. Elimination of any component of an emission, as a particular frequency or group of frequencies in an audio or radio-frequency signal.
2. Reduction or elimination of noise pulses generated by a motor or motor generator.

SUPPRESSOR.

1. Resistor in the grid circuit used to reduce or prevent oscillation or the generation of unwanted RF signals.
2. Resistor in the high-tension lead of a gasoline engine's ignition system.

NOISE. Device for absorbing or shunting off noise energy.

RADIO-FREQUENCY. Device to absorb radiated energy which might cause interference to radio reception.

SUPPRESSOR GRID.

1. Grid which is interposed between two electrodes, both positive with respect to the cathode, to prevent the passing of secondary electrons from one to the other. Not to be confused with grid suppressor.

2. Electrode used in an electron tube to minimize the effects of unwanted secondary-electron emission from the plate or anode. (Reference: PENTODE.)

SUPPRESSOR PULSE.

Pulse used to disable an IFF or beacon transponder during intervals when interference would be encountered.

SUPREME ALLIED COMMANDER, ATLANTIC.

Commander superior in authority to all other allied commanders in the Atlantic Command.

SUPREME COMMANDER, ALLIED POWERS.

Commander superior to all other allied commanders.

SUPREME COMMANDER, EUROPE.

Commander superior to all others in the European Command.

SUPREME HEADQUARTERS, ALLIED POWERS EUROPE.

Headquarters superior to all others for the allied powers in Europe.

SUP YARD (SUPERINTENDENT OF THE DOCK YARD).

Used to identify area dockyard superintendents, such as Sup Yard Norfolk, meaning the superintendent of the dockyard, Norfolk, Virginia.

SUR (SURVEY).

1. Act or instance of examining or viewing to determine the situation, condition, etc.

2. Examination of the circumstances surrounding the loss, damage, or destruction of Air Force property.

SUR. (SURFACE).

1. That which is outermost and without depth in any object or thing.

2. Outside part of a thing.

SURFACE ANALYZER.

Instrument that measures or records irregularities in a surface by moving the stylus of a crystal pick-up or similar device over the surface, amplifying the resulting voltage, and feeding the output voltage to an indicator or recorder that shows the surface irregularities magnified as much as 50,000 times.

SURFACE CODE.

Prearranged code designed for visual communications between ground units and friendly aircraft. (Reference: PANEL CODE.)

SURFACE DUCT.

Atmospheric duct for which the lower boundary is the surface of the earth.

SURFACE LATTICE.

Structural pattern manifested at a natural cleavage surface of a crystal, and recognized by effects analogous to those of a plane grating. (Reference: LATTICE.)

SURFACE LEAKAGE.

Passage of current over the boundary surfaces of an insulator rather than through its volume.

SURFACE NOISE.

Noise reproduced in playing a record caused by rough particles in the record material and/or irregularities in the walls of the groove left by the cutting stylus.

SURFACE RESISTIVITY.

Resistance between two opposite sides of unit square of its surface. Surface resistivity may vary widely with the conditions of measurement.

SURFACE-TO-AIR MISSILE.

Missile designed for use against air targets such as alien aircraft or missiles. It is launched from a surface installation, either fixed or mobile.

SURFACE-TO-SURFACE MISSILE.

Missile designed for use against surface targets

such as airfields, cities etc. It is launched from a surface installation either fixed or mobile.

SURFACE-TO-UNDERWATER MISSILE.

Missile designed for use against underwater targets such as submarines. It is launched from a surface installation, either fixed or mobile.

SURFACE WAVE.

Subclassification of the ground wave. These waves reach the receiving point by following the surface of the earth.

SURGE.

Transient variation in the current and/or potential at a point in the circuit.

SURGE ADMITTANCE.

Reciprocal of surge impedance.

SURGE GENERATOR.

An electric apparatus suitable for the production of surges. (Reference: IMPULSE GENERATOR, LIGHTNING GENERATOR.)

Note. Common surge generator types are transformer-capacitor, transformer-rectifier transformer-rectifier capacitor, parallel charging, and series discharging.

SURGE IMPEDANCE.

Characteristic impedance of a transmission line. When a transmission line is terminated in a load equal to its surge impedance, no reflection will occur and no standing waves will appear. (Reference: CHARACTERISTIC IMPEDANCE.)

SURGE RECORDER.

Instrument for recording surges such as those due to lightning. It has quick-acting relays that start or increase the speed of the record chart or film as soon as disturbance begins, such as the klydonograph and certain types of cathode-ray oscillographs.

SURGES.

Sudden increases of current or voltage in a circuit.

SURPLUS PROPERTY.

Excess property not required for the needs and for the discharge of the responsibilities of all federal agencies, including the Department of

Defense, as determined by the General Services Administration.

SURVEILLANCE.

Systematic observation of air, surface, or subsurface areas by visual, electronic photographic, or other means for intelligence purposes.

SURVEILLANCE CONTROLLER.

Radar controller proficient in the use and interpretation of search and/or height finding radar equipment and trained in the dissemination of the information so gained to assist in the expeditious flow of air traffic, aircraft separation, position reports and emergency situations.

SURVEILLANCE RADAR.

Radar set or system used in a ground-controlled approach system to detect aircraft within a certain radius of an airdrome and present continuously to the radar operator information as to the position, in distance and azimuth, of these aircraft.

SURVEILLANCE RADAR STATION.

Radionavigation land station in the aeronautical radionavigation service employing radar to display the presence of aircraft within its range.

SURVEY.

1. Act or instance of examining or viewing to determine the situation, condition, etc.
2. Examination of the circumstances surrounding the loss, damage, or destruction of Air Force property.

SUSCEPTANCE.

Reciprocal of impedance.

SUSCEPTIBILITY.

Ratio of the induced magnetization to the magnetic force inducing it.

SUSCEPTIBILITY, DIELECTRIC.

Ratio of the polarization in a dielectric to the electric intensity responsible for it.

SUSCEPTIVENESS.

Tendency of a telephone system to pick up noise and low frequency induction from a power system. Determined by:

1. Telephone circuit balance.
2. Transpositions.
3. Wire spacing.
4. Isolation from ground.

SUSPENSION.

Wire that supports the moving coil of a galvanometer or similar instrument.

SUSPENSION INSULTATOR.

Shell assembled with the necessary attaching members.

SUSPENSION INSULATOR WEIGHTS.

Devices, usually cast iron, hung below the conductor on a special spindle supported by the conductor clamp.

Note. Suspension insulator weights will limit the swing of the insulator string, maintaining adequate clearances. In practice, weights of several hundred pounds are sometimes used.

SUSPENSION STRAND.

Stranded group of wires supported above the ground at intervals by poles or other structures and employed to furnish within these intervals frequent points of support for conductors or cables.

SUSRep (SENIOR US REPRESENTATION).

Representative, to a delegation or meeting, senior to other US representatives.

SUSTAINED OSCILLATION.

1. Oscillation in which forces outside the system, but controlled by the system, maintain a periodic oscillation of the system at a period or frequency that is nearly the natural period of the system.
2. Continued oscillation due to insufficient attenuation in the feed back path.

SUSTAINED TONE.

1. Audible sound, many different tones, electrically generated and designed for special uses, are employed in telephony.

2. Source of testing energy. The energy may or may not be calibrated with respect to level or frequency.

sw (SWITCH).

Device for completing, interrupting, or changing the connections in an electric circuit.

Note. In controller practice a switch is considered to be a device operated by other than magnetic means.

swa (SINGLE-WIRE-ARMORED).

Used to identify a single strand, armored wire or cable.

SWAMP FIXTURE.

Construction of lumber at the base of a pole, designed for support in soft ground.

SWC (SPECIAL WEAPONS COMMAND).

SWD (SENIOR WEAPONS DIRECTOR).

Officer in the Direction Center Weapons Branch responsible for committing weapons against targets and for overall supervision of intercept functions in a SAGE center.

swbd (SWITCHBOARD).

Manually-operated apparatus at an exchange on which the various circuits from subscribers and other exchanges are terminated in to enable operators to establish communication either between two subscribers on the same exchange, or between subscribers on different exchanges. Large panel or an assembly of panels on which are mounted switches, circuit breakers, meters, fuses, and terminals essential to the operation of electrical equipment. (Reference: EXCHANGE.)

SWEEP.

Traversing of a range of values of a quantity for the purpose of delineating, sampling, or controlling another quantity.

DELAYED. Sweep of the electron beam of a cathode-ray tube in which the beginning of the sweep is delayed for a time after the pulse which initiates the sweep.

DRIVEN. Sweep triggered only by incoming signal or trigger.

EXPANDED. Sweep of the electron beam of a cathode-ray tube in which the movement of the beam is speeded up during a part of the sweep. (Reference: PRECISION SWEEP.)

FREE-RUNNING. Sweep triggered continuously by internal trigger generator.

LINEAR. Type of time base produced by the application of a sawtooth waveform to the horizontal-deflection plates of a cathode-ray tube.

SWEEP AMPLIFIER.

Vacuum-tube stage designed to increase the amplitude of the sweep voltage.

SWEEP CIRCUIT.

1. Circuit which produces at regular intervals an approximately linear, circular, or other form of movement of the beam of the cathode-ray tube.
2. Part of a cathode-ray oscilloscope which provides a time-reference base. (Reference: SCANNING CIRCUIT.)

SWEEP DISPLACEMENT.

Displacement of a sweep from its normal location or position.

SWEEP GENERATOR.

Circuit which applies voltages or currents to the deflection elements in a cathode-ray tube in such a manner as to make the deflection of the electron beam a known function of time, against which other periodically occurring electrical phenomena may be examined, compared, or measured.

SWEEP JAMMING.

1. Action of jamming a radarscope by sweeping space with electronic impulses of the same frequency as those received by the radarscope.
2. Continuous change in frequency of a jammer at an optimum rate to provide an effective jamming capability over all or a portion of the jammer operating-frequency spectrum.

SWEEP OSCILLATOR.

Oscillator used to deflect periodically the electron beam of a cathode-ray tube so as to give a displacement that is a function of time.

SWEEP VOLTAGE.

Voltage having a waveform suitable for deflecting an electron beam in a cathode-ray tube across the fluorescent screen.

SWEEP-THROUGH.

Jamming transmitter that sweeps through a radio frequency band and jams each frequency briefly, producing a sound like that of an aircraft engine.

SWEEPING RECEIVERS.

Automatically and continuously tuned receivers designed to stop and lock on when a signal is found or to continually plot band occupancy.

SWEPT JAMMER.

Electronic jammer which sweeps a narrow band of electronic energy over a broad bandwidth.

SWING.

Variation in frequency or amplitude of an electrical quantity.

SWINGING.

Momentary variations in frequency of a received wave.

SWINGING ARM.

Type of mounting and feed used to move the cutting head at a uniform rate across the recording disk in some sound recorders. All phonograph pick ups are of the swinging-arm type.

SWINGING CHOKE.

Choke coil so designed that its effective inductance varies with the amount of current passing through it. Used in some power-supply filter circuits.

SWITCH.

Device for completing, interrupting, or changing the connections in an electric circuit.

Note. In controller practice, a switch is considered to be a device operated by other than magnetic means.

ANTENNA. Switch used for connecting the antenna into the circuit.

ANTI-TRANSMIT-RECEIVE. Automatic device employed in a radar for substantially preventing received energy from being absorbed in the transmitter.

RAND. Switch used to select any one of the frequency bands in which an electrical transmission apparatus may operate.

CROSSBAR. Switch having a plurality of vertical paths, a plurality of horizontal paths, and for interconnecting any one of the vertical paths with any one of the horizontal paths.

ELECTRONIC. Electronic circuit which is designed to produce a start-and-stop action similar to that of a mechanical switch.

FINDER. Automatic switch for finding a calling subscriber line or trunk and connecting it to the switching apparatus.

HOWLER. Develops a tone of varying volume to indicate that subscriber's handset is off the cradle; also supplies interrupted ground to a line under test for insulation breakdown.

INSERTION. Process by which information is inserted into the computer by an operator who manually operates switches.

MINOR. Single-motion stepping switch mounted atop the connectors and most commonly used for the party-line selection.

REVERTING CALL. Enables the installer of a subscriber set, upon dialing the ringback number, to hang up the handset or depress the cradle switch and receive ringing current at the telephone.

ROTARY MECHANISM. Switch mechanism of rotary switches consisting essentially of one or more wiping springs affixed to a shaft.

SELECTOR. Remotely controlled switch for selecting a group of trunk lines fixed by part of the call number and connecting to an idle trunk in the group.

SINGLE-MOTION STEPPING. Switch with wipers moving in one direction only.

STEP-BY-STEP. Bank-and-wiper switch in which the wipers are moved by electromagnet ratchet mechanisms individual to each switch.

TRANSMIT-RECEIVE. Automatic device employed in a radar for substantially preventing the transmitted energy from reaching the receiver, but allowing the received energy to reach the receiver without appreciable loss.

TWO-MOTION STEPPING. Switch with wipers rising vertically and then rotating horizontally; forms the basic components of the step-by-step automatic system.

SWITCH BOX.

Wooden case equipped with relays and switches for maintaining continuity in open wires while cutting transpositions.

SWITCH HOOK.

Switch on a telephone set operated by the removal or replacement of the receiver or handset on the support.

SWITCH JACKS.

Provide terminals for the control circuits of the switch.

SWITCH ROOM.

Part of a central office building that houses switching mechanisms and associated apparatus.

SWITCH TRAIN.

Sequence of switches through which connection must be made to establish a circuit between a calling telephone and a called telephone.

SWITCHBOARD.

Manually operated apparatus at an exchange, on which the various circuits from subscribers and other exchanges are terminated to enable operators to establish communication either between two subscribers on the same exchange, or between subscribers on different exchanges. Single large panel or an assembly of panels on which are mounted switches, circuit breakers, meters, fuses, and terminals essential to the operation of electrical equipment. (Reference: EXCHANGE)

A. Manual telephone switchboard in a local central office, primarily to receive subscriber calls and to complete connections either directly or through some other switching equipment.

ATTENDANT'S. Switchboard of one or more positions in a central-office location which permits the central office operator to receive, transmit or cut in on a call to or from one of the lines which the office services.

AUTOMATIC. Telephone switchboard in which the connections are made by using remotely controlled switches.

B. Manual telephone switchboard in a local central office, primarily to receive and complete connections from other central offices.

CORDLESS. Manual telephone switchboard which uses manually operated keys to make connections.

MAGNETO. Manual exchange at which the subscribers and operators call and clear by means of magneto generators.

MANUAL. Telephone switchboard in which the connections are made manually, either by plugs and jacks or by keys.

MONOCORD. Local - battery switchboard in which each telephone line terminates in a single jack and plug.

MULTIPLE. Manual telephone switchboard in which each subscriber line is attached to two or more jacks, so as to be within reach of several operators.

MULTIPOSITION. Telephone switchboard of two or more positions served by more than one operator.

RED LINE. Switchboard or position on which trunk(s) and circuit(s) are terminated as part of the red line system.

TELEPHONE. Switchboard for interconnecting telephone lines and associated circuits.

SWITCHBOARD CORD.

Cord which is used in conjunction with switchboard apparatus to complete or build up a telephone connection.

SWITCHBOARD DROP.

Entire switchboard circuit which terminates a line circuit.

SWITCHBOARD LAMP.

Electric lamp associated with the wiring of a switchboard to give a visual indication of the status of a call, or to give information concerning, the condition of trunks, subscriber lines, apparatus, etc. Frequently, the cap covering the lamp has coded colors or marks.

SWITCHBOARD POSITION.

Part of a switchboard designed for the use of one operator.

SWITCHBOARD SECTION.

Structural unit, providing for one or more operator positions.

SWITCHBOARD SUPERVISORY LAMP.

Lamp in a cord circuit or trunk circuit which is controlled by one or other of the users to attract the attention of the operator.

SWITCHBOARD SUPERVISORY RELAY.

Relay which controls a switchboard supervisory lamp.

SWITCHING.

Making, breaking, or changing the connections in an electrical circuit.

BEAM/LOBE. Method of determining the direction of a remote object by comparison of the signals corresponding to two or more successive beam angles differing slightly from the direction of the object.

MANUAL. Method by which manual connection is made between two or more teletypewriter circuits.

SWITCHING CENTRAL.

Installation in a wire system where telephone or teletypewriter switchboards are installed, to permit the interconnecting of telephone or teletypewriter circuits.

SWITCHING CONTROL.

Installation in a wire system where telephone or teletypewriter switchboards are installed to interconnect telephone or teletypewriter circuits.

SWITCHING THROUGH.

Extension of a calling line loop, clear of attachments, through one switch to a succeeding switch of a switch train.

SWITCHING TORQUE.

Switching torque of a motor having an automatic connection change during the starting period is the minimum external torque developed by the motor as it is accelerated through switch operating speed.

SWITCHING TRUNK.

Trunk from a long distance office to a local exchange office used for completing a long distance call.

SWITCHING-THROUGH RELAY.

Control relay of a linefinder, selector, connector, or other stepping switch, which extends the loop of a calling telephone through to the succeeding switch in a switch train.

SWR (STANDARD WAVE RATIO).

1. Ratio of current (or voltage) at a loop (maximum) in a transmission line to the value at a (minimum) node. It is equal to the ratio of the characteristic impedance of the line to the impedance of the load connected to the output end of the line.

2. Ratio of the amplitude of a standing wave at an antinode to the amplitude at a node.

SWT (SENIOR WEAPONS DIRECTOR TECHNICIAN).

Noncommissioned officer who assists the senior weapons director in a SAGE center.

SX (SIMPLES CIRCUIT, SIMPLES LEG).

SX (SIMPLEX).

Used commercially to identify Simplex designations.

SYLLABIC ARTICULATION.

Articulation obtained when the speech units considered are syllables.

SYLLABIC COMPANDING.

Companding in which the effective gain variations are made at speeds allowing response to

the syllables of speech but not to individual cycles of the signal wave.

SYLLABLE ARTICULATION.

Percentage of the total number of spoken meaningless syllables which are correctly recognized.

SYMBOL.

Design, letter, or abbreviation used on diagrams and maps, in formulas, etc., to represent specific characteristics, quantities, or objects. Radio parts are often represented by schematic symbols on circuit diagrams.

SYMBOLOGY.

Characters or symbols (letters, numerals, pictures, etc.) used to present information on display tubes in a SAGE system.

SYMMETRICAL.

Balanced, therefore having equal characteristics on each side of a central line, position, or value.

SYMMETRICAL, ALTERNATING CURRENT.

Alternating current of which all pairs of values that are separated by a half period have the same magnitude but opposite sign.

SYMMETRICAL ALTERNATING QUANTITY).

Alternating quantity of which all values separated by a half period have the same magnitude but opposite sign.

SYMMETRICAL TRANSDUCER.

Transducer whose input and output image impedances are equal.

SYMPATHETIC VIBRATION.

Vibrations induced in one system by the vibrations in another system because of resonance between the two systems.

SYNC (SYNCHRONOUS).

In step or in phase. Running at the same speed as some associated machine.

SYNC SECTION.

Circuit comprising keyer, burst amplifier, phase detector, reactance tube, subcarrier oscillator and quadrature amplifier.

SYNC-SIGNAL GENERATOR.

Synchronizing signal generator for a television receiver or transmitter.

SYNCHRO.

Type of wound-rotor ac motor used for repeating angular motion both as to speed and total angle. The name selsyn is often used synonymously with synchro, and is an abbreviation of the term self-synchronous, and indicates the normal use of the equipment.

SYNCHRO CONTROL TRANSFORMER.

Synchro in which the electrical output of the rotor is dependent on both the shaft position and the electrical input to the stator.

SYNCHRO DIFFERENTIAL GENERATOR.

Synchro unit which receives at its primary terminals an order from a synchro generator, modifies this order mechanically by any desired amount by the angular position of the rotor, and transmits the modified order from its secondary terminals to other synchro units.

SYNCHRO DIFFERENTIAL MOTOR.

Motor which is electrically similar to the synchro differential generator except that a damping device is added to prevent oscillations. Both its rotor and stator are connected to synchro generators, and its function is to indicate the sum or difference between the two signals transmitted by the generators.

SYNCHRO GENERATOR.

Synchro which has an electrical output proportional to the angular position of its rotor.

SYNCHRO MOTOR.

Synchro in which the rotor shaft position is dependent on the electrical input.

SYNCHRO SYSTEM.

System obtaining remote indication or control by means of self-synchronizing motors such as selsyns and equivalent types.

SYNCHRONISM.

1. Relationship between two or more periodic quantities of the same frequency when the phase difference between them is constant.
2. Applied to the synchronous motor, the condition under which the motor runs at a speed which is directly related to the frequency of the

power applied to the motor and is not dependent upon other variables.

SYNCHRONIZATION.

1. Precise matching of two waves or functions.
2. In carrier, that degree of matching, in frequency, between the carrier used for modulation and the carrier used for demodulation which is sufficiently accurate to permit efficient functioning of the system. A few cycles per second mismatch causes no perceptible loss of performance.
3. Process of keeping the electron beam on the television receiver screen in the exact position relative to the scanning beam at the transmitter.

SYNCHRONIZE.

Adjust the periodicity of an electrical system so as to bear an integral relationship to the frequency of the periodic phenomenon under investigation.

SYNCHRONIZED GROUP.

Classified definition. (Reference: AFM 100-50.)

SYNCHRONIZER.

Component of a radar set which generates the timing voltage for the complete set. (Reference: TIMER.)

SYNCHRONIZING.

Maintenance of predetermined speed relations between the scanner and the recorder within each scanning line.

SYNCHRONIZING OF IMAGES.

Maintaining of the time, and thus space relations, between the parts of the transmitted and reproduced pictures.

SYNCHRONIZING PULSE.

Pulses added to the video output signal of a television camera for the purpose of synchronizing television receivers with the transmitter.

SYNCHRONIZING REACTOR.

Current-limiting reactor for connecting momentarily across the open contacts of a circuit-interrupting device for synchronizing purposes.

SYNCHRONIZING RELAY.

Relay which functions when two alternating current sources are in agreement within predetermined limits of phase angle and frequency.

SYNCHRONIZING SEPARATOR.

Television receiver circuit that separates the control impulse from video signals. (Reference: AMPLITUDE SEPARATOR.)

SYNCHRONIZING SIGNAL.

Signal employed for the synchronizing of scanning in television.

SYNCHRONOUS.

In step in phase. Running at the same speed as some associated machine.

SYNCHRONOUS BOOSTER CONVERTER.

Synchronous converter having an ac generator mounted on the same shaft and connected in series with it for the purpose of adjusting the voltage at the commutator of the converter.

SYNCHRONOUS CAPACITOR.

Rotating machine running without mechanical load, and so designed that its field excitation may be varied in order to draw a leading current (like a capacitor) and thereby modify the power factor of the ac system or influence the load voltage through such change in power factor.

SYNCHRONOUS CLOCK.

Electric clock driven by a synchronous motor, for operation on an ac power system in which the frequency is accurately controlled.

SYNCHRONOUS CONVERTER.

Synchronous machine which converts alternating current to direct current, or vice versa. The armature winding is connected to collector rings and commutator.

SYNCHRONOUS GATE.

Time gate wherein the output intervals are synchronized with an incoming signal.

SYNCHRONOUS GENERATOR.

Synchronous ac machine which transforms mechanical power into electric power.

SYNCHRONOUS INDUCTION MOTOR.

Wound-rotor induction motor to which dc excitation is supplied when it approaches rated speed, enabling it to start as an induction motor and operates as a synchronous motor.

SYNCHRONOUS MACHINE.

Machine in which the average speed of normal operation is exactly proportional to the frequency of the system to which it is connected.

SYNCHRONOUS MOTOR.

Synchronous machine which transforms electric power from an ac system into mechanical power. Synchronous motors usually have dc field excitation, and will run at a speed which is directly related to the frequency of the power applied to the motor and is not dependent upon other variables.

SYNCHRONOUS RECTIFIER.

Rectifier in which contacts are opened and closed at correct instants of time either by a synchronous vibrator or by a commutator driven by a synchronous motor.

SYNCHRONOUS SPEED.

Speed value related to the frequency of an ac power line and the number of poles in the rotating equipment. Synchronous speed in revolutions per minute is equal to the frequency in cycles divided by the number of poles, with the result multiplied by 120.

SYNCHRONOUS VIBRATOR.

Electromagnetic vibrator that simultaneously converts a low dc voltage to a low alternating voltage and rectifies a high alternating voltage obtained from a power transformer to which the low alternating voltage is applied. In power packs, it eliminates the need for a rectifier tube.

SYNCHROSCOPE.

1. Instrument used to determine the phase difference or degree of synchronism of two ac generators or two ac quantities.
2. Oscilloscope on which recurrent pulses or waveforms may be observed, which incorporates

a sweep generator that produces one sweep for each pulse. The sweep usually is very fast to permit display of short pulses.

SYNOPTIC.

Descriptive term indicating that meteorological observations, collective reports or charts refer to a fixed time.

SYNTONY.

Condition in which two oscillating circuits have the same resonant frequency.

SYS (SYSTEM).

Overall term used to describe communication facilities from an engineering aspect including all the associated equipment.

SYSTEM.

ABSOLUTE. System of units in which numbers of units are chosen as fundamental and all other units are derived from them.

ACOUSTIC. System designed for transmission of sound.

ADCOCK. Radio system utilizing an adcock antenna.

ALL-RELAY. Type of automatic telephone switching system in which switching functions are accomplished by relays.

BASE WIRE AND TELEPHONE. Encompasses facilities within a 50 mile radius of the parent base which are a part of the over-all base central office, outside plant, telephone station equipment and supporting structures.

BASE-SECURITY COMMUNICATIONS. Two-way radio communications system consisting of a base station and one or more portable and/or mobile units, used for the prompt and efficient control of air police and office of special investigations personnel and vehicles.

BLIND APPROACH BEACON. Pulse-type, ground-based navigation beacon used for runway approach at airfields used primarily in the United Kingdom.

BROAD-BAND CARRIER. Carrier system which is capable of providing 12 or more telephone channels.

C CARRIER. Low-frequency carrier system which provides three telephone channels, utilizing frequencies up to 32 kilocycles, by means of effective four-wire transmission on a single, open-wire pair.

CARRIER CONTROLLED APPROACH. Aircraft-carrier radar system which provides information so aircraft approaches may be directed via radio communications.

CGS. Absolute system for measuring physical quantities in which the fundamental units are the centimeter, gram and second. This system is primarily applicable only to mechanical units. It is extended to other fields of physical science by accepting the energy and by introducing a fourth unit or a property of a material. For example, in the theory of heat, the degree centigrade is taken as an additional unit.

CLOSED CIRCUIT. Telegraph system in which, when no station is transmitting, the circuit is closed and current flows through the circuit.

COMMON. System of air navigation and air traffic control facilities designed to meet the requirements of uses of air space in the Con US, except tactical military units. Basic plan for the common system was developed by special committee 31 of the Radio Technical Commission for Aeronautics. The plan outlines requirement for development of new equipments and their integration into existing systems over an extended period of time.

COMMON-BATTERY TELEPHONE. Telephone system which has current supplied to it from a central source.

COORDINATE. Group of quantities which taken together serve to define the position of a point in two-or three-dimensional space.

CRASH-FIRE. Two-way radio communications system consisting of a base station and one or more portable and/or mobile units, used for prompt and efficient control of fire, crash, crash-ambulance vehicles, and personnel.

CROSSBAR. Automatic telephone switching system characterized as follows: 1. The selecting mechanisms are crossbar switches; 2. Common circuits select and test the switching paths and control the operation of the selecting mechanisms; 3. The method of operations is one in which the switching information is received and stored by controlling mechanisms which determine the operations necessary in establishing a telephone connection.

GENERAL PURPOSE. Specific cryptosystems intended for any type of message.

GROUND-SERVICE COMMUNICATION. Two-way radio communications system consisting of a base station and one or more mobile and/or portable units for the efficient control of personnel and vehicles for maintenance expediting, ramp control, and related purposes.

H CARRIER. Low-frequency carrier system which provides one carrier channel, utilizing frequencies up to about 10 kilocycles, by means of effective four-wire transmission on a single open-wire pair.

HIGH-GRADE CRYPTOGRAPHIC. System designed to provide lasting security such as, inherently resisting solution for a comparatively long period or indefinitely.

HUNDRED-LINE. Simplest type of step-by-step link; consists of line-finder and connector switches.

HYPERBOLIC NAVIGATION. Term descriptive of certain pulse-type methods of radio navigation in which two or more properly synchronized ground stations transmit pulses. An aircraft or ship receives the pulses and records the difference in their time of arrival, which is a measure of the difference in its distance from the two ground stations and which establishes its location on a particular hyperbolic curve out of the large number of curves drawn on the maps used. A second reading from another pair of stations (or from the same "master" and a different "slave"

station) establishes its location on a different hyperbolic curve, the intersection of which with the first curve gives the position fix. Systems using this principle are the British GEE and American LORAN.

INSTRUMENT LANDING. System of radio-navigation, intended to assist aircraft in landing, which provides lateral and vertical guidance, including indications of distance from the optimum point of landing.

Note. The term ILS has been generally accepted to designate the specific system of electronics aid to approach comprising: 1. A localizer operating within the radiofrequency band 108-112 mc. 2. A glide slope Facility operating within the radiofrequency band 328.6-335.4 mc. 3. ILS markers operating on the radio-frequency of 75 mc.

INTEGRATED COMMUNICATIONS. Communications system on either a unilateral or joint basis, in which a message can be filed at any communication center in that system and be delivered to the addressee(s) by any other appropriate communication center in that system without reprocessing en route. Such a system requires uniformity of procedures, through linking between the various communications systems operated by several services, and established arrangements for necessary relay.

INTERCARRIER SOUND. Television receiving system in which use of the picture carrier and the associated sound channel carrier produces an intermediate frequency equal to the difference between the two carrier frequencies. This intermediate frequency is frequency-modulated in accordance with the sound signal.

J CARRIER. Broad-band carrier system, providing 12 telephone channels, which utilizes frequencies up to 140 kilocycles by means of effective four-wire transmission on a single open-wire pair.

K CARRIER. Broad-band carrier system, providing 12 telephone channels, which utilizes frequencies up to 60 kilocycles by means of four-wire transmission on cable facilities.

LOCAL-BATTERY TELEPHONE. Telephone system in which the current for talking is supplied at each telephone.

LOUDSPEAKER. Combination of one or more loudspeakers, and associated baffles, horns, and dividing networks working together as a coupling means between the driving electric circuit and the acoustic medium.

LOW GRADE CRYPTOGRAPHIC. System designed to provide temporary security.

MANUAL TELEPHONE. Telephone system in which telephone connections between customers are ordinarily established manually by telephone operators in accordance with orders given verbally by the calling parties.

MILITARY FLIGHT SERVICE INTERPHONE COMMUNICATIONS. Integrated network of commercial telephone facilities which are leased by the Government to provide an efficient and expeditious means of passing messages pertaining to, and necessary for, the movement of military air traffic.

MKS ELECTROMAGNETIC UNITS. Absolute system of units based on the meter, kilogram and second, as fundamental units and extended to the electrical units by the measurement of current by its magnetic effects and by the measurement of potential difference by the power per unit current.

NEUTRAL DIRECT-CURRENT TELEGRAPH. Telegraph system employing current during marking intervals and zero current during spacing intervals for transmission of signals over the line.

PANEL. Automatic telephone switching system which is generally characterized as follows: 1. The contacts of the multiple banks over which selection occurs are mounted vertically in flat rectangular panels; 2. The brushes of the selecting mechanism are raised and lowered by

a motor which is common to a number of these selecting mechanisms; 3. The switching pulses are received and stored by controlling mechanisms which govern the subsequent operations necessary in establishing a telephone connection.

POLAR DIRECT-CURRENT TELEGRAPH. Telegraph system employing positive and negative currents for transmission of signals over the line.

POLARENTIAL TELEGRAPH. Telegraph system employing polar transmission in one direction and a form of differential duplex transmission in the other direction.

POST OFFICE POSITION INDICATOR. Continuous-wave, LF navigation system of the phase-comparison type.

PUBLIC ADDRESS. System designed to pick up and amplify sounds for an assembly of people.

SUBSTITUTION. System in which arbitrary symbols are substituted for the plain-text symbols in order to form a cryptogram.

TACTICAL AIR CONTROL. System operated by the Air Force for the purpose of providing a tactical air force commander the organization and equipment required to plan, direct, and control air operations. It is through this system that the tactical air force commander is able to achieve centralized control over his forces and integration of effort between the air force and the field army.

TELEPHONE. Assemblage of telephone stations, lines, channels and switching arrangements for their interconnection, together with all the accessories for providing telephone communication.

TELERAN. Navigational system which employs the following:

1. Ground-based search radar equipment along an airway to locate near flying aircraft.
2. Transmits, by television means, information to pilots of properly equipped aircraft.

3. Provides information to pilots appropriate for landing approach.

TEN-THOUSAND-LINE. Similar to the thousand-line system, but contains a second selector switch between the first selectors and connectors.

THOUSAND-LINE. Similar to the hundred-line system, but contains a first selector switch between the linefinder and the connectors.

RADIO RELAY. Point-to-point radio transmission system in which the signals are received and retransmitted by one or more intermediate radio stations.

ROTARY. Automatic telephone switching system which is generally characterized as follows: 1. The selecting mechanisms are rotary switches; 2. The switching pulses are received and stored by controlling mechanisms which govern the subsequent operations necessary in establishing a telephone connection.

SEMI-AUTOMATIC TELEPHONE. Telephone system in which operators receive orders verbally from the calling parties and establish connections by means of automatic apparatus.

SERVO. Electromechanical system which is used for positioning one element of a system in relation to another.

SPECIAL PURPOSE. Specific cryptoaids intended only for certain types of messages. They include general and auxiliary signal books and signal vocabulary, authenticator system, aircraft codes, fighter director vocabulary, etc.

STEREOPHONIC. Sound reproducing system in which a plurality of microphones, transmission channels, and loudspeakers (or earphones) are arranged so as to afford a listener a sense of spatial distribution of the sound sources.

STEP-BY-STEP. Automatic telephone switching system which is generally characterized as follows: 1. Selecting mechanisms are step-by-step switches; 2. Switching pulses may either actuate the successive selecting mechanisms

directly or may be received and stored by controlling mechanisms which, in turn, actuate the selecting mechanisms.

TIME ZONE LETTERING. Twenty-five time zone areas identified by use of letters. Beginning with the letter "A" at Zone 13 ($7^{\circ}30' - 22^{\circ}30' E$), the letters extend Eastward through "M". Zone number 12 ($7^{\circ}30' E - 7^{\circ}30' W$) is designated "Z". The letter system then from "Z", beginning with "N" is omitted. The conversion chart can thus be used whenever maps or publications use the lettering system to identify the time zones.

TIME ZONE NUMBERING. Twenty-five time zone areas numbered from 0 through 24 (0 and 24 being actually the same zone), beginning with 0 at the International Date Line and extending East, circumventing the earth's surface to the 24 zone or 0 zone again. Certain publications and maps use this system for identifying the 24 time zones. For such publications the conversion chart may be used for computing time or time differences.

TRANSMISSION. Assembly of elements capable of functioning together to transmit signal waves.

TRANSPOSITION. System in which the plain text symbols are retained, but are rearranged to form a cryptogram.

V-BEAM. Radar system employing an antenna arrangement in which two fan-shaped beams, one vertical and the other inclined, intersect at ground level. In the V-beam system of measuring elevation, the beam antenna system rotates continuously about a vertical axis. The time elapsing between the receipt of echoes on the two beams from an object is a measure of its elevation.

SYSTEM COMMUNICATIONS.

Communications system is a series of interconnected communications networks, circuits, stations, and facilities for fulfilling communications needs on a board scale. The USAF Air Communications Complex (AIRCOM) is the only communications complex within the Air Force.

(Reference: COMMUNICATIONS NETWORK.)

SYSTEM ENGINEERING.

Process of giving a communication system its concrete and final form. This process is developed from a system plan. System engineering encompasses the selection of types and quantity of equipment and determination of who they will be assembled to fill the needs of the system.

SYSTEM EVALUATION TEST.

Portion of installation testing procedure which encompasses the entire direction center.

SYSTEM GROUNDING CONDUCTOR.

Solidly grounded conductor which connects together the individual grounding conductors in a given area.

Note. This conductor is not normally a part of any current-carrying circuit including the system neutral.

SYSTEM INDICATOR.

Group of symbols indicating which cryptochannel was used to encrypt the message.

SYSTEM LAYOUT.

Chart or diagram indicating number, type, and terminations of circuits on a microwave system.

SYSTEM MAINTENANCE.

Actions involved in maintaining a system. (Reference: MAINTENANCE.)

SYSTEM MANAGER.

Air Force agency responsible for the implementation, operation, and maintenance of the COMLOGNET.

SYSTEM OF UNITS.

Assemblage of units for measuring physical quantities. System of units is complete if it is applicable to measurement of known physical quantities.

SYSTEM OPERATION.

Operation of communication equipment in such a manner so as to enable the individual components to function at the degree of reliability for which the system was designed.

SYSTEM PERFORMANCE TEST.

Technical test of a complete communications system

which is made to determine if that system is performing within the operational tolerances.

SYSTEM PLANNING.

Establishment of the general requirement and the general form of a communications system.

SYSTEM STANDARDS.

1. Minimum required electrical performance characteristics of communications circuits, which are based on the measured performance of developed circuits under the various operating conditions for which the circuits were designed.
2. Specified characteristics which are not dictated by electrical performance requirements but are necessary in order to permit interoperation. Example: the values for center frequencies of telegraph channels, test tone, etc.

SYSTEM TECHNICAL CENTER.

Branch within each Direction Center and Combat Center responsible for providing liaison between operations and maintenance personnel and coordinating the activities of the various maintenance agencies to insure effective operation of the equipment associated with a SAGE system. It is manned by a system technical coordinator and system technical coordinator technician(s).

SYSTEM TECHNICAL COORDINATOR.

Officer specialized in radio, radar, wire communications, and computer operation in a SAGE system. The Coordinator is responsible for proper functioning of such equipment within his sector or division.

SYSTEM TECHNICAL COORDINATOR TECHNICIAN.

Noncommissioned officer who assists the System Technical Coordinator in the SAGE system.

SYSTEMATIC DISTORTION.

Term denoting the periodic or constant distortion, such as bias or characteristic distortion, and is the direct opposite of fortuitous distortion.

S4 (SPIRAL QUAD).

Structural unit employed in telephone and telegraph cables, consisting of four separately insulated conductors twisted about a common axis. (Reference: SPIRAL FOUR.)

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T (TELETYPE).

System of transmitting over a distance, messages employing keyboard sending and type-printed reception. (Reference: TELETYPEWRITER.)

T/A (TABLE OF ALLOWANCE).

Publication which establishes the maximum equipment allowances and provides the guide and control to develop, revise, or amend unit allowance lists and base allowance lists. These tables provide the basis for authorizing organic equipment to table of distribution units and augmenting the organic equipment of table of organization units.

T/D (TABLE OF DISTRIBUTION).

Table formerly prepared by and for a major air command upon authority of the Department of the Air Force, which prescribed a particular distribution of the military and civilian personnel within a specialized unit against the authorization of a personnel allotment voucher.

T/O & E (TABLE OF ORGANIZATION AND EQUIPMENT).

Air Force publication that prescribes the personnel structure and equipment of a standard unit activated under its authority. This publication is now obsolete and has been replaced by the Master Equipment Allowance List (MEAL).

T-ANTENNA.

Consisting of one or more horizontal wires, with the lead-in connection being made at the approximate center.

T-NETWORK.

Network composed of three impedance branches connected in star; one end of each branch is connected to a common point, while the three remaining ends are connected to an input terminal, an output terminal, and a common input and output terminal, respectively.

T-PAD.

Pad made up of resistance elements arranged as a T-network (two resistors inserted in one line, with a third between their junction and the other line).

T-R (TRANSMIT-RECEIVE).**T-TIME.**

Elapsed time of the flight of a missile or space weapon starting from the moment the vehicle leaves its stand.

T-JUNCTION.

Junction between a main waveguide and a perpendicular branch waveguide.

TAB.

Name sometimes given to an appendix or supporting document, in reference to its label when so used, as in "Tab A". Term is used advisedly by some writers to designate a subordinate part of an annex. In this system, the annex is an attachment to an appendix, an appendix is an attachment to the main text. (Reference: APPENDIX).

TAB. (TELECOMMUNICATION ADVISORY BOARD).**TABLE OF ALLOWANCE.**

Publication which establishes the maximum equipment allowances and provides the guide and control to develop, revise, or amend unit allowance lists or base allowance lists. These tables provide the basis for authorizing organic equipment to table of distribution units and augmenting the organic equipment of table of organization units.

TABLE OF DISTRIBUTION.

Table which prescribes the distribution of personnel and grades for units and installations organized under a bulk allotment in Army and Air Force usage.

TABLE OF DISTRIBUTION UNIT.

Designated military unit organized from non-T/O personnel authorized by a Personnel Allotment Voucher and in accordance with a Table of Distribution.

TABLE OF DISTRIBUTION-AUGMENTATION.

Non-T/O (Table of Organization) personnel authorization table, indicating the distribution of non-T/O personnel authorizations by number, job title, specialty code, and grade for one or more functions of a specific T/O. A Table of Distribution-Augmentation is authorized by a major air command to supplement a T/O of the

headquarters of an air force, air division, or a comparable unit, and for the support elements within the wing and air support group structures. Other T/O units may be augmented only after specific authority is obtained from Headquarters, USAF.

TABLE OF ORGANIZATION.

Air Force publication which prescribes the organizational format for, and authorization of, personnel to Air Force units, including combat and service units or any other type of Air Force organization with fixed mission and workload requirement.

TABLE OF ORGANIZATION UNIT.

Unit regularly constituted and activated in accordance with an approved Table of Organization or Table of Organization and Equipment.

TABLE-MODEL RECEIVER.

Radio receiver having a cabinet of suitably small size for use on a table.

TAC. (TACTICAL AIR COMMAND).

1. General term applied to an air organization designed to conduct offensive and defensive air operations in conjunction with land or sea forces.
2. Designation of one of the subordinate commands of the Air Force.

TAC. (TACTICAL AIR COORDINATOR).

Officer who coordinates, from an aircraft, the action of combat aircraft engaged in close support of ground or sea forces.

TACAN.

Tactical air navigation system which consists of an airborne set, AN/ARN-21, operating with an AN/URN-3 or AN/URN-6 ship or shore based beacon. It provides the pilot of equipped aircraft with automatic continuous meter indications of the distance and bearing of the beacon. Bearing, which may be obtained alone, is obtained from the rotating antenna pattern of the beacon, while distance is obtained by air interrogation, beacon response. The AN/ARN-21 provides pilot with position information comparable in accuracy to pilot's ability to maneuver. Information is continuous and automatic. The TACAN

system is intended for eventual installation in all military tactical aircraft. TACAN has an azimuth or bearing accuracy to within one degree, and a distance accuracy of the order of two tenths of a mile. Relative absence of site effects accounts in part for the high bearing accuracy.

TACAN DATA LINK.

Data link is a term that refers to some sort of rapid, automatic, and selective communication system, not using voice radio, for exchanging messages between aircraft and ground stations as an aid to air-traffic control. Other terms for these systems include private line, impulse-signaling system, air-traffic control signaling system, and discreet-address system. The tacan data link is an air-traffic-control signaling and automatic reporting system that operates over the same radio-frequency channels and equipment that provide the tacan air navigational services of bearing and distance indication and operates simultaneously with these navigational services.

TACC (TACTICAL AIR CONTROL CENTER).

(Reference: AIR CONTROL CENTER.)

TACHOMETER OR TACHYMETER.

Instrument for measuring linear or angular speeds in revolutions per minute.

TACHYGRAPH.

Recording tachometer.

TACP (TACTICAL AIR CONTROL PARTY).

(Reference: AIR CONTROL TEAM.)

TACTICAL ACTION DISPLAY.

Situation display which shows all interceptors committed against a target and their computed intercept points in air defense operations.

TACTICAL AIR COMMAND.

1. General term applied to an air organization designed to conduct offensive and defensive air operations in conjunction with land or sea forces.
2. Designation of one of the subordinate commands of the Air Force.

TACTICAL AIR CONTROL CENTER.

(Reference: AIR CONTROL CENTER.)

TACTICAL AIR CONTROL GROUP.

1. (Land-based) Flexible, administrative, and tactical component of a tactical air organization which provides aircraft control and warning functions ashore for offensive and defensive missions within the tactical air zone of responsibility.
2. Administrative and tactical component of an amphibious force which provides aircraft control and warning facilities afloat for offensive and defensive missions within the tactical air command area of responsibility.

TACTICAL AIR CONTROL PARTY.

(Reference: AIR CONTROL TEAM.)

TACTICAL AIR CONTROL SQUADRON.

1. Flexible, administrative, and tactical component of a tactical air control group which provides the control mechanism for a land-based tactical air control center, a tactical air direction center, or tactical air control parties.
2. Administrative and tactical component of the tactical air control group which provides the control mechanism for the ship-based tactical air direction center or the ship-based tactical air control center.

TACTICAL AIR CONTROL SYSTEM.

System operated by the Air Force for the purpose of providing a tactical Air Force commander with the organization and equipment required to plan, direct, and control air operations. It is through this system that the tactical Air Force commander is able to achieve centralized control over his forces and integration of effort between the Air Force and the field army.

TACTICAL AIR CONTROLLER.

Officer in charge of all operations of the tactical air control center. He is responsible to the tactical air commander for the control of all aircraft and air warning facilities within his area of responsibility.

TACTICAL AIR COORDINATOR.

Officer who coordinates, from an aircraft, the action of combat aircraft engaged in close support of ground or sea forces.

TACTICAL AIR DIRECTOR.

Officer in charge of all operations of the tactical air direction center. He is responsible to the tactical air controller for the direction of all aircraft and air warning facilities assigned to his area of responsibility. When operating independently of an air control center, the tactical air director assumes the functions of the tactical air controller.

TACTICAL AIR INTELLIGENCE.

Intelligence that bears upon the capabilities, limitations, vulnerabilities, and probable intentions of a hostile air force. Particularly an air force that might challenge control of the air or provide support for hostile surface forces.

TACTICAL AIR OPERATION.

Air operation involving the employment of air power in coordination with ground or naval forces to: Gain and maintain air superiority in localized sectors to the degree that ground or naval forces can operate freely without effective opposition from the enemy's air power; Prevent movement of enemy forces into and within the objective area and to seek out and destroy these forces and their supporting installation; and join with ground or naval forces in operations within the objective area, in order to assist directly in attainment of their immediate objective.

TACTICAL AIR SUPPORT.

Phase, or phases, of air operations which assist in the furtherance of a land campaign. It includes support to ground forces by air action against enemy air and land objectives as well as enemy ground forces in the battle area.

TACTICAL BOMB LINES.

Lines, (land) prescribed by a troop commander, beyond which he considers properly coordinated bombing would not endanger his own forces.

TACTICAL CALL SIGN.

Call sign which identifies a tactical command or tactical communication facility.

TACTICAL CHANNEL ASSIGNMENT PANEL.

Console at the senior weapons director's station

for use in assigning tactical radio frequencies to the intercept director in a SAGE center.

TACTICAL CIRCUIT DIAGRAM.

Line drawing of the circuits of a communications net, showing the number, kind, and location of lines and all headquarters and subordinate units, within security requirements, by code names and coordinates.

TACTICAL FREQUENCY.

Radio frequency assigned to an intercept director and an interceptor to provide communications for performing a mission.

TACTICAL MAP.

Large scale map used for tactical and administrative purposes.

TACTICAL MISSILE.

Guided missile employed in Air Force tactical missions. Tactical missiles will be designated with the prefix TM followed by a numerical designator.

TACTICAL RECONNAISSANCE MISSION.

Aerial reconnaissance mission, employing photographic, electronic, or direct observation methods, flown for the purpose of obtaining information on terrain, hydrography, enemy forces, communications, installations, and activities. Information obtained is used in short-range operational planning and to assist friendly forces in accomplishing their objective.

TACTICS.

1. Employment of units in combat.
2. Ordered arrangement and maneuver of units in relation to each other and/or to the enemy in order to utilize their full potentialities.

TAD. (TACTICAL ACTION DISPLAY).

Situation display which shows all interceptors committed against a target and their computed intercept point in a SAGE system.

TADC (TACTICAL AIR DIRECTION CENTER).

(Reference: CONTROL AND REPORTING CENTER.)

TADP (TACTICAL AIR DIRECTION POST).

Former name for target director post.

TAGGING.

Numbering or lettering identified pairs in cable splicing.

TAIL.

Small pulse, following the main pulse and in the same direction; or the slow decay, following the main body of pulse.

TAIL CLIPPING.

Method of sharpening the trailing edge of a pulse.

TAIL-WARNING RADAR SETS.

Sets that warn of approach of aircraft from the rear.

TAILING.

1. Distortion produced when the facsimile signal changes from maximum to minimum signal conditions at a slower rate than required. This results in tailing on the lines in the recorded copy.
2. Excessive prolongation of the decay of the signal wave tail.

TAKEOFF MONITOR.

Electronic device which automatically warns a pilot when his aircraft is failing to "make good" during takeoff run.

TALK-LISTEN SWITCH.

Switch provided on intercommunication units to permit using the speaker as a microphone when desired.

TALK-RINGING KEY.

Combined talking key and ringing key operated by one handle.

TALKDOWN.

Term used for ground-controlled approach of aircraft. The operator, who has before him a clear oscilloscope picture of the exact position of an aircraft landing in bad weather, guides the pilot to the proper altitude and bearings, lines him up with landing strip, and brings him down to within a few feet of the runway.

TALKER ECHO.

Echo which reaches the ear of the talker.

TAL

TALKING BATTERY.

Source of energy of special design or with added filters which is sufficiently quiet and free from interference that it may be used for speech transmission. (Reference: QUIET BATTERY.)

TALKING KEY.

Key used to connect a microphone to a line or cord.

TALOS.

Surface-to-air missile developed for the Navy. The nomenclature is SXAM-N-6. It is a supersonic missile powered by a ramjet engine.

TANDEM.

Method of interconnecting central offices by trunks when the central offices do not have trunks directly to each other.

TANDEM CENTRAL OFFICE.

Central office primarily used as a switching point for traffic between other central offices.

TANDEM COMPLETING TRUNK.

Trunk extending from a tandem office to a central office, used as part of a telephone connection between stations.

TANDEM OFFICE.

Telephone office which handles connections between smaller offices located in a group around it. It handles no direct connections to subscribers, but serves only to connect one telephone office with another.

TANDEM OPERATION.

Electrically or mechanically coupling two cipher machines to produce automatic decipherment simultaneously with encipherment as a check.

TANDEM TRUNK.

Trunk extending from a central office or a tandem office to a tandem office and used as part of a telephone connection between stations.

TANGENT GALVANOMETER.

Galvanometer consisting of a small compass mounted horizontally in the center of a large vertical coil of wire. The current through the coil is proportional to the tangent of the angle of deflection of the compass needle.

TANGENTIAL COMPONENT.

Component acting at right angles to a radius.

TANGENTIAL WAVE PATH.

1. Radio wave propagation over the earth.
2. A path of propagation of a direct wave which is tangential to the surface of the earth. The tangential wave path is curved by atmospheric refraction.

TANK.

1. Container or reservoir on aircraft, or other powered vehicle, from which liquid is fed into the engine or engines.
2. Container built into the cargo space of an aircraft, or other vehicle, and used for the storage and transportation of bulk liquid.
3. Armored, full-tracked vehicle.

TANK CIRCUIT.

1. Tuned circuit used in connection with a vacuum tube. It is so called because of its ability to store energy temporarily.
2. Parallel resonant circuit connected in the plate circuit of an electron tube generator.

TAP.

1. Connection brought out of a winding at some point between its extremities, usually to permit changing the voltage ratio.
2. A branch. Applies to conductors as battery tap and to miscellaneous general use.

BRIDGED. Portion of a cable pair connected to a circuit which is not a part of the useful path.

TAP SWITCH.

Multicontact switch used chiefly for connecting a load to any one of a number of taps on a resistor or coil.

TAPE.

Ribbon of flexible material. Many types are used, described by a qualifying adjective such as friction, lead, muslin, etc.

CHANDLESS. Tape used in printing telegraphy /teletypewriter operation. The perforations

are not completely severed from the tape, thereby permitting the characters representing the perforations in the tape to be printed on the same tape.

WHEATSTONE. Tape used for automatic transmission and reception of International Morse Code. 1. For transmission: a tape providing for two unit perforation; two holes perforated vertically equal a dot, and two holes perforated obliquely equal a dash. 2. Ink recording tape; a tape drawn through an ink recorder, the finger of which draws a continuous ink line; dots or dashes are indicated by fluctuations in the ink line.

TAPE COPY.

Message in tape form which is the result of a transmission.

TAPE ARMORED CABLE.

Cable with an overlapping wrapping of flat steel tapes to prevent damage.

TAPE FACSIMILE RECORDER.

Facsimile recorder designed to reproduce the facsimile copy on a narrow tape.

TAPE FACSIMILE TRANSMITTER.

Facsimile transmitter designed to transmit from a narrow tape of subject copy.

TAPE RECORDER.

Device for recording sound on strips of tape which have been coated or impregnated with a magnetic substance. Usually combined with means for reproducing the sound through headphones or loudspeaker.

TAPE RELAY.

Method of receiving and retransmitting messages in tape form.

TAPE TRANSMITTER.

Machine for high-speed keying of telegraph code signals previously recorded on tape.

TAPE-RELAY STATION.

A component of a communications center which performs the function of receiving and forwarding messages by the tape-relay method of operation.

TAPED UNITS.

1. Classified definition. (Reference: AFM 100-50.)
2. Units taped together to form a belt for feeding to certain types of automatic dispensers.

TAPER.

1. Relation between an electrical quantity and mechanical position.
2. Continuous change of cross section of a waveguide. (Reference: FLARE ANGLE.)

TAPPED CONTROL.

Rheostat or potentiometer having a fixed tap at some point along the resistance element, usually to provide a fixed grid bias or for automatic bass compensation.

TAPPED RESISTOR.

Wire-wound, fixed resistor having one or more additional terminals along its length, generally for voltage-divider applications.

TAPPER BELL.

Single-stroke bell having a gong designed to produce a sound of low intensity and relatively high pitch.

TARGET.

1. Air defense term. Any non-interceptor track against which one or more interceptors are paired.
2. Electrode, or part of an electrode, on which cathode rays are focused and from which X-rays are emitted. (Reference: ANODE.)

TARGET ALIGNMENT.

Alignment of spot indication in center of scope when beam is directly on target.

TARGET BREAK-UP.

Dissolution of one solid return from an urban area into a number of individual returns which correspond to the various structure groupings within the urban area.

TARGET DIRECTION POST.

A narrow beamed radar station capable of accurately positioning aircraft over predetermined

TAR

target coordinates, or other geographical locations under all weather conditions. A Target Direction Post normally operates in conjunction with a Control and Reporting Post.

TARGET IDENTIFICATION.

Visual procedure by which a target is positively identified as either hostile or friendly.

TARGET SYSTEM.

Group of targets which are so related that their destruction will produce some particular effect desired by the attacker.

TAS (TRUE AIRSPEED).

Actual speed of an aircraft relative to the air through which it flies. Equal to calibrated airspeed corrected for temperature, density, or compressibility.

TASIMETER.

Instrument for measuring temperature differences by means of the pressure exerted on the equivalent of a carbon microphone by a hard rubber strip that expands as temperature increases.

TASK FORCE.

1. Temporary grouping of units under one commander, formed for the purpose of carrying out a specific operation or mission.
2. Semipermanent organization of units under one commander for the purpose of carrying out a continuous specific task.
3. Major subdivision of a fleet or of an independent command organized for the accomplishment of a specific task.

TB (TECHNICAL BULLETIN).

Publication containing information or advisory matter, and issued by any Air Force headquarters unit.

TB (TRIPLE-BRAIDED).

Term used to designate triple-braided wire or cable.

TBS (TRAINING AND BATTLE SIMULATION).

Section where simulated radar returns may be introduced into the system to develop synthetic air situations. It provides a source for monitoring and evaluating operational tests.

TBWP (TRIPLE-BRAIDED, WEATHER PROOFED).

Term used to designate triple-braided, weather-proofed wire or cable.

TCAP (TACTICAL CHANNEL ASSIGNMENT PANEL).

Console in the SAGE center at the senior weapons director's station for use in assigning tactical radio frequencies to intercept director.

TCC (TELECOMMUNICATIONS COORDINATING COMMITTEE).

Committee informally organized at the instance of the State Department by agreement of the Government agencies concerned. It makes recommendations on telecommunications matters for action by the respective agencies, coordinates aviation and communications matters, and approves, from a policy standpoint, statements of the United States position for use in international telecommunications conferences.

TD (TRANSMITTER-DISTRIBUTOR).**TDA (TABLE OF DISTRIBUTION-AUGMENTATION).**

Table prepared by a major air command augmenting the personnel of a specific standard unit. This table is now obsolete and is replaced by the unit manning document.

TDMS (TRANSMISSION DISTORTION MEASURING SET).**TDP (TARGET DIRECTOR POST).**

Special control element in the tactical air control system, used to position friendly aircraft by means of radar and radio over target or other geographical coordinates. Operates directly under the reporting center.

TE (TASK ELEMENT).

Subdivision or part of a military organization or formation that may function as a separate entity for a particular undertaking, requiring a specially organized, but temporary force to accomplish.

TE (TRANSVERSE ELECTRIC) WAVE.

Transverse electric wave, one of the two classes of waves that can be sent through waveguides. A TE wave possesses longitudinal magnetic

force with the electric vector everywhere perpendicular to the direction of wave propagation. The first subscript numeral following the letters gives the order of the wave, corresponding to the number of vibrations or half period variations of the field along diameters of a circular waveguide or along the X coordinate of a rectangular guide. The second subscript numeral gives the mode of the wave, corresponding to the number of vibrations of the field in a radial direction between the center and the walls, counting the outermost (the wall or sheath) as one, or the number of vibrations along the Y coordinate of a rectangular waveguide.

TEASER TRANSFORMER.

Transformer, of two T-connected, single-phase units for 3-phase to 2-phase or 2-phase to 3-phase operation, which is connected between the mid-point of the main transformer and the third wire of the 3-phase system. (Reference: SCOTT CONNECTION.)

TECH. (TECHNICAL).

1. Having knowledge, training, or skill to manipulate, use, inspect, appraise, or control mechanical apparatus, laboratory equipment, clerical procedures, or the like.
2. Distinguished by the use of new scientific or engineering discoveries or techniques.
3. Established by reference to special requirements serving exact and precise purposes.

TECHNICAL COMPONENTS.

These include, but are not limited to, the following:

1. Telephone switchboard, instruments, terminal panels, and intercommunication and public address system stations or speakers.
2. Cable, wire, and like items which are not an integral part of the building, but which are required for the installation of a C-E facility.
3. Radio, radar, IFF, navigational aids, teletype, electronic-countermeasures and facsimile equipment, and electrical and electronics-fixed meteorological equipments.

4. Antenna systems including poles, towers, guys, transmission lines, and base and site preparation required for actual installation.

TECHNICAL INTELLIGENCE.

Intelligence concerning foreign technological developments which have advanced to the point of having a practical application for war purposes. It includes all steps in development which follows the initial application of a principle or theory for the purpose of waging war.

TECHNICAL MANUAL.

Army publication approximately corresponding to the Air Force Technical Order. It contains detailed information on technical procedures, including instructions on the operation, handling, maintenance, and repair of equipment.

TECHNICAL ORDER.

Publication that supplies specific technical directions and information with respect to the inspection, storage, operation, modification, and maintenance of given equipment.

TECHNICAL REPRESENTATIVE.

Employee representing a manufacturer of Air Force equipment paid for by the Air Force under contract with the manufacturer. Technical representative provides service only on equipment manufactured by his concern and is particularly qualified in the maintenance and operation of such equipment.

TECHNICALLY COMPLETED STATUS.

Stage in the installation of C-E facility at which necessary site construction is basically finished, major equipment components are electrically installed, minimum communications networks are available, and site calibration or operational tests can be started.

TECHNOLOGICAL SURPRISE.

New or unique foreign technological development or an application of new or different operational techniques. Used in electronic intelligence work.

TELAUTOGRAPH.

Writing telegraph instrument, in which movement of a pen in the transmitting apparatus

varies the current in two circuits in such a way as to cause corresponding movement of a pen at the remote receiving instrument.

TELAUTOGRAPHY.

Transmission of images by telegraphic means over wires.

TELEAMMETER.

Telemeter that measures current.

TELECAMERA.

Television camera; used to convert scenes into corresponding electrical impulses.

TELECAST.

Television program, or the act of broadcasting a television program.

TELECINE PROJECTOR.

Motion-picture projector and associated equipment employed for televising motion-picture film.

TELECOMMUNICATION.

Emission or reception of signals, signs, writing, images and sounds or intelligence of any nature by wire, radio, visual or other electromagnetic systems.

TELECON (TELETYPEWRITER CONFERENCE).

(Reference: TELECONFERENCE.)

TELECONFERENCE.

Conference between persons remote from one another, but linked by a telecommunications system.

TELECONFERENCE SERVICE.

Means whereby staff sections at one headquarters may discuss or confer on official matters with staff sections at another headquarters through an electrical transmission medium such as a teletypewriter.

TELECTROGRAPH.

System of phototelegraphy in which the original subject copy composed of lines on a metal base, prepared by photography through a single screen of parallel lines. Metal stylus moving over the plate makes contact with the metal base only in regions corresponding to dark areas of the picture, so that current flows for dark portions. At

the receiver, this current makes a colored mark by electrolytic action on paper moving synchronously.

TELEDELTOX.

Dry, electrosensitive facsimile recording paper.

TELEFAX.

General name given to the Western Union Telegraph Company's many applications of facsimile transmission methods.

TELEGRAM.

Written matter intended to be transmitted by telegraph. This term includes radiotelegrams.

TELEGRAPH.

System of communication by coded signals. As used today, hand sending and ear receiving are implied.

TELEGRAPH CHANNEL.

Channel suitable for the transmission of telegraph signals.

TELEGRAPH CIRCUIT.

Complete circuit over which signal currents flow between transmitting and receiving apparatus in a telegraph system. It sometimes consists of an overhead wire or cable and a return path through the ground.

TELEGRAPH CODE.

List of impulse combinations corresponding to letters and figures used in telegraphic communications.

TELEGRAPH CONCENTRATOR.

Switching arrangement by means of which a number of branch or subscriber lines or station sets may be connected to a lesser number of trunk lines, operating positions, or instruments through the medium of manual or automatic switching devices in order to obtain more efficient use of facilities.

TELEGRAPH DISTRIBUTOR.

Device which effectively associates one direct-current or carrier telegraph channel in rapid succession with the elements of one or more signal sending or receiving devices.

TELEGRAPH KEY.

Hand-operated device for opening and closing contacts which modulate current with telegraph signals.

TELEGRAPH LINE.

Channel for passing telegraph or teletypewriter signals.

TELEGRAPH REPEATER.

Arrangement of apparatus and circuits for receiving telegraph signals from one line and retransmitting corresponding signals into another line.

TELEGRAPH SELECTOR.

Device which performs a switching operation in response to a definite signal or group of successive signals received over a controlling circuit.

TELEGRAPH SIGNAL DISTORTION.

Time displacement of transitions between conditions, such as marking and spacing, with respect to their proper relative positions in perfectly timed signals. The total distortion is the algebraic sum of the bias and the characteristic and fortuitous distortions.

TELEGRAPH SOUNDER.

Telegraph receiving instrument by means of which Morse signals are interpreted aurally, or read, by noting the intervals of time between sounds.

TELEGRAPH TRANSMISSION SPEED.

Rate at which signals are transmitted, and may be measured by the equivalent number of dot-cycles per second or by the average number of letters or words transmitted and received per minute.

Note: A given speed in dot-cycles per second (often abbreviated to dots per second) may be converted to bauds by multiplying by 2. The baud is the unit of signaling transmission speed recommended by the International Consultative Committee on Telegraph Communication. Where words per minute are used as a measure of transmission speed, five letters and a space per word are assumed.

TELEGRAPH TRANSMITTER.

Device for controlling a source of electric power so as to form telegraph signals.

TELEGRAPH-MODULATED WAVES.

Continuous waves, the amplitude or frequency of which is varied by means of telegraphic keying.

TELEGRAPHIC TYPE SETTING.

Remote control of a typesetting or typesetting machine through the medium of a telegraph line, sometimes directly and sometimes with the intermediary of a perforated paper tape.

TELEPHONE.

1. Electrical apparatus for recording sound on a moving steel wire, tape, or disk by varying the magnetization, with subsequent reproduction by passing the magnetized material through pick-up coils connected to a telephone receiver or to an amplifier and loudspeaker. The initial magnetization is produced by sending audio-frequency currents through iron-core coils positioned on either side of the moving steel material.
2. Apparatus that automatically records the number of a caller at the called station when there is no one at the called station to answer.

TELEGRAPHY.

System of a telecommunication for the transmission of intelligence by the use of a signal code.

AUTOMATIC. Method of telegraph operation in which, by the use of automatic apparatus, the manual operations involved are effectively reduced or eliminated.

MANUAL. Method of telegraph operation in which the signal elements are formed individually by an operator from his knowledge of the code and simultaneously transmitted.

MORSE. Method of telegraph operation in which the signals are formed in accordance with the Morse code.

MOSIAC. Method of telegraph operation in which the patterns forming the characters are made up from units transmitted as individual signal elements.

MULTIPLEX PRINTING. Form of printing telegraphy in which the line circuit is employed to transmit in turn one character (or one or more pulses of a character) for each of two or more independent channels.

PRINTING TELETYPEWRITER. Method of manual telegraph operation in which signals are transmitted by means of a keyboard instrument and are automatically recorded by the receiving instrument in the form of printed characters.

VOICE-FREQUENCY CARRIER. Form of carrier telegraphy in which the carrier currents have frequencies such that the modulated currents may be transmitted over a voice-frequency telephone channel.

TELEMETER.

Complete measuring, transmitting, and receiving apparatus for indicating, recording, or integrating the value of a quantity at a distance by electric translating means.

TELEMETER SERVICE.

Metered telegraph transmission between paired teleprinters over an intervening circuit adapted to serve a number of such pairs of teleprinters on a shared time basis.

TELEMETERING.

1. Remote indication of values or readings of meters or gauges usually involving electrical transmission between points.
2. Automatic radio communication, in a fixed or mobile service, intended to indicate or record a measurable, variable quantity at a distance.

TELEMETERING EQUIPMENT.

Formulating and reformulating apparatus for indicating and/or recording the value of a measured quantity at a distance by electrical means.

TELEMETERING FIXED STATION.

Fixed station, the emissions of which are used for telemetering.

TELEMETERING LAND STATION.

Land station, the emissions of which are used for telemetering.

TELEMETERING MOBILE STATION.

Mobile station, the emissions of which are used for telemetering.

TELEMETERING SYSTEM.

System for measurement with the aid of intermediate means permitting the measurement to be observed or recorded at a distance from the primary detector.

TELEMETRY.

1. Technique of transmitting data over great distances.
2. Radio link from a remote vehicle whereby information related to measurements in transmitted to established receiving stations. Used extensively in missile development programs to relay missile flight data to the ground, either for recording or as a basis for ground initiated commands to the vehicle.

TELEPHONE.

Combination of apparatus for converting speech energy into electrical waves, transmitting the electrical energy to a distant point, and there converting the waves into audible sounds.

CLASS A. Telephone authorized for the transaction of official business, with access to all facilities, including long distance trunks at Government expense.

CLASS B. Telephone authorized for the transaction of official business, but may be used for unofficial service, with access to long-distance trunks at subscriber's expense.

CLASS C. Telephone authorized for the transaction of official business, but restricted to intra-base communication, with no access to long-distance trunks.

CLASS D. Telephone restricted to special classes of service such as fire alarm, guard alarm, and watchman services.

FIELD. Portable telephone, the outstanding characteristics of which include durability and lightness.

TELEPHONE CAPACITOR.

Fixed capacitor connected in parallel with a telephone receiver to bypass RF and higher audio frequencies and thereby reduce noise.

TELEPHONE CARRIER CURRENT.

Carrier current used for telephone communication to obtain more than one channel on a single pair of wires.

TELEPHONE CENTRAL.

Installation which consists of a switchboard, the necessary auxiliary equipment, and personnel for operation. (Reference: EXCHANGE.)

TELEPHONE CENTRAL OFFICE.

Telephone switching unit, installed in a telephone system providing service to the general public, having the necessary equipment and operating arrangements for terminating and interconnecting lines and trunks.

TELEPHONE CHANNEL.

Channel suitable for the transmission of telephone signals.

TELEPHONE CIRCUIT.

Complete circuit over which audio and signaling currents travel in a telephone system between the two telephone subscribers in communication with each other.

TELEPHONE CONNECTION.

Two-way telephone channel completed between two points by means of suitable switching apparatus and arranged for the transmission of telephone currents, together with the associated arrangements for its functioning with the other parts of a telephone system in switching and signaling operations.

TELEPHONE CURRENT.

Electric current produced or controlled by the operation of a telephone transmitter.

TELEPHONE DROP.

Pair of conductors serving to extend a circuit from a pole line to the terminals of the interior wiring of a telephone station.

TELEPHONE EXCHANGE.

Unit of a telephone communication system for the provision of communication service in a specified area which usually embraces a city, town, or village and its environs.

TELEPHONE JACK.

Receptacle on a telephone or telegraph switchboard having several contact springs behind the board for performing switching operations and making connections to the various parts of the plug that is inserted in the jack.

TELEPHONE LINE.

General term used in communication practice in several different senses, the more important of which are:

1. The conductor or conductors and supporting or containing structures extending between telephone stations and central offices or between central offices whether they be in the same or different communities.

2. The conductors and circuit apparatus associated with a particular communication channel.

TELEPHONE OPERATOR.

Person who handles switching and signaling operations needed to establish telephone connections between stations, or who performs various auxiliary functions associated therewith.

TELEPHONE QUARTZ.

(Reference: FILTER QUARTZ.)

TELEPHONE RECEIVER.

1. Earphone for use in a telephone system.
2. Electroacoustic transducer actuated by energy from an electrical system and supplying energy to an acoustic system; the wave form in the acoustic system being substantially equivalent to that in the electrical system.

TELEPHONE REPEATER.

Repeater for use in a telephone circuit.

TELEPHONE RINGER.

Electric bell designed to operate on low frequency alternating or pulsating current and associated with a telephone station for indicating a telephone call to the station.

TELEPHONE SET.

Assemblage of apparatus including a telephone transmitter, a telephone receiver, and usually a switch, and the immediately associated wiring and signaling arrangements.

TELEPHONE STATION.

Installed telephone set and associated wiring and apparatus, in service for telephone communication. As generally applied, this term does not include the telephone sets employed by central office operators and by certain other personnel in the operation and maintenance of a telephone system.

TELEPHONE SUBSCRIBER.

Customer of a telephone system who is served by the system under a specific agreement or contract.

TELEPHONE SWITCHBOARD.

Switchboard for interconnecting telephone lines and associated circuits.

TELEPHONE SYSTEM.

Assemblage of telephone stations, lines, channels, and switching arrangements for their interconnection, together with all the accessories for providing telephone communication.

TELEPHONE TRANSMITTER.

1. Microphone for use in a telephone system.
2. Electroacoustic transducer actuated by sound waves and supplying electrical waves of similar characteristics for transmission over a circuit.

TELEPHONE TYPES.

1. Electrically powered telephone: telephone in which the operating power is obtained either from batteries located at the telephone (local battery) or from a telephone central office (common battery).
2. Sound-powered telephone. Telephone in which the operating power is derived from the speech input only.

TELEPHONOGRAPH.

Equipment for recording on a phonograph a message received by telephone.

TELEPHONOMETRY.

Measurements and tests of telephone circuits and apparatus.

TELEPHONY.

Transmission of speech current over wires, by means of which two persons can converse effectively over any distance.

TELEPHONY/VOICE.

System of telecommunication set up for the transmission of speech or other sounds.

TELEPHOTO.

Photo-electrical transmission system for point-to-point or air to ground, air transmission of high-definition pictorial information. Photographic, printed or drawn copy up to 9 x 12 inches can be transmitted and the same size copy, negative or positive on film or photographic paper, can be received. The system operates on international indices of co-operation as well as on American standards. Variable drum speeds and pictorial definition scanning, up to 300 lines per minute, are manually controlled. The system is used for transmission of reconnaissance photos and similar graphic material requiring high definition.

TELEPHOTO LENS.

Lens system that is physically shorter than its rated focal length, used in ordinary and television cameras to secure large images of objects at comparatively great distances.

TELEPHOTOGRAPHY.

Reproduction of photographs or other pictures at a distance by means of radio or wire communication. Usually shortened to telephoto.

TELEPRINTER.

Simplified form of teletypewriter system using a typewriter keyboard instrument for transmission and a motor-driven type printer for receiving.

TELERAN.

Navigation system which employs ground radar and television transmitting equipment with television receiving equipment in the aircraft. The television image of the ground radar PPI scope plus map and weather data are transmitted to the aircraft.

TELERAN SYSTEM.

Navigational system which:

1. Employs a ground-based search radar equipment along an airway to locate aircraft flying near that airway.
2. Transmits, by television, information pertaining to nearby aircraft to the pilots of properly equipped aircraft.
3. Provides information to the pilots appropriate for use in the landing approach.

TELERING.

Frequency-selector device for the production of ringing power. For the production of 20-cycle ringing power from a 60-cycle source, it selects every third half-cycle of the input to be used as a half-cycle of the output frequency.

TELESTEOGRAPH.

System of photoelegraphy.

TELESYND.

Telemeter or remote-control equipment which is synchronous in both speed and position.

TELEthermometer.

Apparatus for indicating or recording temperature values at a distance.

TELETYPE.

System of transmitting over a distance, messages employing keyboard sending and typeprinted reception. (Reference: TELETYPEWRITER.)

TELETYPESETTER.

Apparatus for setting and casting type directly in response to received telegraph signals.

TELETYPEWRITER.

Printing telegraph instrument having a keyboard similar to that of a typewriter for use in sending messages, and having motor-driven, signal-actuated mechanisms for printing received messages directly.

2. System of transmission of messages employing keyboard sending and typeprinted reception over a distance.

3. Terminal device used in teletypewriter transmission.

4. Teleprinter which prints the messages in page form and can also be used to transmit messages by standard typing methods.

TELETYPEWRITER CODE.

Code used in teletypewriter communication in which each code group is made up of five units or elements, of equal length. These elements are known as marking or spacing impulses.

TELETYPEWRITER EXCHANGE SERVICE.

Commercial service in the USA permitting teletypewriter communication on the same basis as telephone service, operating through central switchboards to stations within the same city or in other cities. This service is limited to subscribers as in telephone service.

TELETYPEWRITER SIGNAL DISTORTION.

Applied to a start-stop teletypewriter signal, the shifting of the transition points of the signal pulses from their proper positions relative to the beginning of the start pulse. The magnitude of the distortion is expressed in percent of a perfect unit pulse length.

TELETYPEWRITER TEST TAPE.

Perforated tape containing the identification of transmitting station followed by repetitions of the letters RY, and a test consisting of letters and figures.

TELEVIEW.

Viewing a scene by means of a television system.

TELEVISION.

System of telecommunication for the transmission of transient images of fixed or moving objects.

TELEVISION BROADCAST BAND.

Several groups of channels, each containing a number of six-magacycle channels, that are available for assignment to television broadcast stations.

TELEVISION BROADCAST STATION.

Radio station for transmitting visual signals, and usually simultaneous aural signals, for general reception.

TELEVISION CAMERA.

Pick-up unit used in a television system to convert into electrical signals to optical image formed by a lens.

TELEVISION CHANNEL.

Channel suitable for the transmission of television signals. The channel for associated sound signals may or may not be considered a part of the television channel.

TELEVISION CONNECTION.

Terminals provided at the input of the audio-frequency amplifier in an ordinary radio receiver to permit using the receiver to reproduce the sound portion of a television program. The audio-frequency signal is obtained from a television receiver having no audio-frequency channel. The system is no longer in common usage.

TELEVISION ENGINEERING.

Phase of radio engineering which deals with the theory and practice of transmitting television programs and accompanying sound through space and receiving such programs with appropriate equipment.

TELEVISION RECEIVER.

Receiver for converting incoming electric signals into television pictures and associated sound.

TELEVISION RECONNAISSANCE.

Air reconnaissance conducted to supplement photographic and visual reconnaissance by providing instantaneously at ground and surface installations representations of the view from an airplane in flight as viewed by either optical or electronic means. (Reference: AFM 100-50.)

TELEVISION REPEATER.

Repeater for use in a television circuit.

TELEVISION TRANSMITTER.

Radio-frequency and modulating equipment for transmitting modulated radio-frequency power representing a complete television signal (including audio, video, and synchronizing signals).

TELEVISOR.

Name for television receiver.

TELEVOLTMETER.

Telemeter that measures voltage.

TELEWATTMETER.

Telemeter that measures power.

TELEWRITER.

(Reference: TELAUTOGRAPH.)

TELEX.

Audio-frequency teleprinter system used in Great Britain to provide teletypewriter service over telephone lines.

TELEX. (INTERNATIONAL TELEPRINTER EXCHANGE) SERVICE.

Service is furnished the USAF by American Cable and Radio System and various other communications companies.

TELL TALE.

Warning indicator which shows loss of synchronism between PPI rotation and antenna rotation.

TELLING.

Process of communication air-surveillance information between air-defense units.

LATERAL. Between adjacent units of the same operational level.

FORWARD. From a lower to a higher echelon of command.

TELLING CIRCUIT.

Circuit or channel of communication over which is transmitted air surveillance information between filter centers, direction centers, control centers, anti-aircraft operation rooms, and similar installations.

TEMPERATURE ALARM.

Warning indicator light or buzzer which indicates overheating.

TEMPERATURE COEFFICIENT.

Factor used to calculate the change in the characteristics of a substance, device, or circuit element with changes in its temperature.

TEMPERATURE COEFFICIENT OR RESISTANCE.

Amount that a one-ohm piece of material increases in resistance for each degree of rise in temperature above 0° centigrade.

TEMPERATURE COMPENSATION.

Process by which the frequency of vibration of the tuning fork is made relatively independent of ambient temperature change.

TEMPERATURE CONTROL.

Switch, actuated by a thermostat responsive to changes in temperature, used to maintain temperature within certain limits.

TEMPERATURE DETECTOR.

Instrument used to measure the temperature of a body or of some particular part of a body. A temperature detector may employ any physical property that is dependent on temperature. The most commonly used properties are: Differential expansion of two bodies; thermoelectromotive force at the junction of two metals; change of resistance of a metal; and radiation from a hot body.

TEMPERATURE RADIATOR.

Body whose production of radiant energy is determined by its temperature and the material and character of its surface, and is independent of its previous history.

TEMPERATURE RELAY.

Relay which functions at a predetermined temperature in the apparatus protected.

TEMPERATURE SATURATION.

Condition in which the plate current of a thermionic vacuum tube cannot be further increased by increasing the filament voltage; hence, cathode temperature at a given value of plate voltage. The effect is due to the space charge formed near the cathode. (Reference: FILAMENT SATURATION.)

TEMPERATURE WAVE.

Progressing variation of temperature, such as that inaugurated by strongly heating one end of a long bar of cold metal. A succession of such waves would result from alternately heating and cooling the end of the bar.

TEMPERATURE-COMPENSATING CAPACITOR.

Capacitor whose capacitance varies with temperature in a known and predictable manner, used extensively in oscillator circuits to compensate

for changes in the values of other parts with temperatures.

TENSION.

1. Mechanical: The condition of strain which tends to stretch.
2. Electrical: A term meaning potential or electrostatic voltage.

TENTATIVE.

Track status, in air defense, indicating that the automatic-tracking program is examining data to determine if the track thus identified meets the criteria for established tracks.

TENTATIVE STANDARD.

- Type classification of equipment. An item which appears promising enough operationally to warrant the risk of initiating production of limited quantities prior to the completion of development or prior to completion of functional and/or suitability tests.

TENTATIVE TABLE OF EQUIPMENT.

Publication which prescribes items of equipment required to support newly developed aircraft or missile types, models, and series, prior to formal inclusion of required items in the Master Equipment Authorization List, Equipment Component List, or Table of Allowance.

TERMINAL.

1. Fitting to which electrical connections are made.
2. Final station in a radio relay system.

AERIAL. Terminal connected to an aerial cable.

CABLE. Device to connect to a cable to bring out leads and make them available for connection.

LD. Subscriber's line connected directly to a long distance switchboard.

TERMINAL AREA RADAR CONTROL.

Combination of a high resolution surveillance radar and precision radar system engaged in the complete radar control of aircraft operating within a designated terminal control area and/or control zone.

TERMINAL BLOCK.

Set of punchings, set in hard rubber or other insulating material, mounted on a piece of wood. This assembly is rigidly fastened, as to a frame, and usually wired permanently on one side, permitting wires to be connected and changed on the other. (Reference: DISTRIBUTING BLOCK.)

TERMINAL BOARD.

Insulating base or slab, equipped with terminals for connecting wiring.

TERMINAL BOX.

Housing where cable pairs are brought out to terminations for connection.

TERMINAL BRUSH.

Brush with long bristles for cleaning fuses and terminals in a terminal box.

TERMINAL CUTOUT PAIRS.

Numbered, designated pairs brought out of a cable at a terminal.

TERMINAL EQUIPMENT.

1. Communications equipment at the end of a communications channel which is essential to the transmitting and/or receiving operator for controlling the transmission and/or reception of messages of intelligence.
2. Telephone and teletypewriter switchboards and other centrally located equipment at which wire circuits are terminated.

TERMINAL IMPEDANCE.

Complex impedance as seen at the unloaded output or input terminals of a transmission equipment or line which is otherwise in normal operating condition.

TERMINAL LUG.

Threaded lug in a terminal box to which a wire may be fastened.

TERMINAL REPEATER.

1. Assemblage of equipment designed specifically for use at the end of a communication circuit, as contrasted with the repeater designed for an intermediate point.

2. Two microwave terminals arranged to provide for the interconnection of separate systems, or separate sections of a system.

TERMINAL ROOM.

Telephone practice, a room associated with a central office, private branch exchange, or private exchange, which contains distributing frames, relays, and similar apparatus except that mounted in the switchboard section.

TERMINAL STATION.

Microwave equipment and associated multiplex equipment used at the ends of a microwave system.

TERMINAL STRIP.

Block of insulating material to which are fastened several binding posts.

TERMINAL STUB.

Piece of cable which comes with a cable terminal for splicing into the main cable. (Reference: TERMINAL LUG.)

TERMINAL VHF OMNI-RANGE.

VHF OMNI-RANGE, normally low powered, complete with a local monitoring device which will automatically shut down the facility if it is not operating properly. The TVOR is intended primarily for installation in terminal areas, on or adjacent to an airport, to provide navigational guidance to aircraft during approach and let-down to the airport.

TERMINAL-PER-LINE.

System that uses one connector terminal on a party line; selection is made within the connector. One of three digits selects the frequency of the desired party. Individual lines may be assigned in connector groups of this type.

TERMINAL-PER STATION.

System that uses a connector terminal for each individual and exchange line, also for each party on a party line. A two-digit connector is used. Frequency selection is made by connector shelves or by special terminal-per-station connectors that use a 400-point bank for this purpose.

TERMINATED CRYSTALS.

Term applied to quartz crystals with well developed rhombohedral faces. Singly terminated crystals have rhombohedral faces at only one end of the vertical axis, doubly terminated crystals at both ends of the vertical axis.

TERMINATED FOLDED DIPOLE.

Folded dipole having a resistor, equal in value to the average characteristic impedance of the antenna connected across those inner ends which are not fed.

TERMINATED LINE.

Transmission line terminated in a resistance equal to the characteristic impedance of the line, so there is no reflection and no standing waves.

TERMINATING.

Closing of the circuit at either end of a line or transducer by connecting some device thereto. Terminating does not imply any special condition such as the elimination of reflection.

TERMINATING TRUNK CIRCUIT.

Trunk circuit which is used to interconnect loop circuits.

TERMINATION.

1. Load connected to a transmission line or other device. To avoid wave reflections it must match the characteristic of the line or device.
2. Waveguide technique, the point at which energy flowing along a waveguide continues in a nonwaveguide mode of propagation.

TERMINATION CHARGES.

Charges agreed upon by the Air Force to be paid when communication service is discontinued prior to the expiration of a specified service period.

TERNARY.

(Reference: POSITIONAL NOTATION.)

TERNARY CODE.

Code in which each code element may be any one of three distinct kinds of values.

TERRAIN CLEARANCE INDICATOR.

Device for measuring the distance from an aircraft to the surface of the sea or ground.

TERRESTRIAL MAGNETISM.

Magnetism observable everywhere due to the fact that the earth itself is a permanent magnet, having its magnetic poles near the geographical poles.

TERRIER.

Surface-to-air guided missile developed for the Navy. It is rocket-powered, weighs, 3,360 lbs, and has a top speed of mach 2 and a range of approximately 20 miles. The nomenclature is XSAM-N-7. It is capable of shipboard launching and is intended for air defense of the fleet and marine ground bases. The missile is 14 feet, 8 inches long, 12 inches in diameter, and has a fin span of 4 feet, one inch. It can attain an altitude of 60,000 feet and is guided by the command, beam rider technique.

TERRITORY.

Entire geographical area designated as the area of responsibility of North American Air Defense Command.

TERTIARY WINDING.

Winding added to a transformer in addition to the conventional primary and secondary windings such as for suppressing third harmonics or for making connections to a power-factor correcting device.

TESLA COIL.

Air-core transformer having a few turns of heavy wire as primary and many turns of fine wire as secondary.

TESLA TRANSFORMER.

(Reference TESLA COIL.)

TEST.

Procedure or progression of operations to determine the manner in which apparatus is functioning or the existence, type, and location of trouble conditions.

BUSY. Test to determine if circuits are available and may be taken for use.

TEST AMPLIFIER UNIT.

Amplifier output of echo box, bolometer, or other test equipment.

TEST BOARD.

1. Switchboard equipped with testing apparatus, so arranged that connections can be made from it to telephone lines or central office equipment for testing purposes.
2. Commercial switchboard equipped with apparatus for making tests and for temporary interconnection and rearrangement of circuits, usually toll circuits.

TEST BOX.

Wooden case holding jacks wired to a centered test position.

TEST CABINET.

Box containing apparatus for trouble location and routine maintenance.

TEST CONNECTOR.

1. Device, usually operated by a spring, to connect the leads from portable meters and apparatus to other equipment or conductors.
2. Connector controlled by an operator or from the test-desk to connect them to a subscriber's line. It is not arranged to hunt.

TEST DESK.

Exchange testing, a board with trunks to distributing frames and testing apparatus for testing users' lines, switching trunks, and cable pairs.

TEST HANDSET.

Handset used for test purposes in a central office or in the outside plant. It may contain in the handle other components in addition to the transducer; for example, a dial, keys, capacitors, and resistors.

TEST LEAD.

Flexible insulated lead used chiefly for connecting meters and test instruments to a circuit under test at a test point.

TEST OSCILLATOR.

Test instrument that can be set to generate an unmodulated or tone-modulated radio-frequency signal at any frequency needed for aligning or servicing radio receivers and amplifiers. (Reference: OSCILLATOR and GENERATOR.)

TEST PROD.

Sharp metal point provided with an insulated handle and means for electrically connecting the point to a test lead. It is used for making touch connection to a circuit terminal.

TEST ROUTINE.

1. Synonym for check routing.
2. Used as a general term to include both check routine and diagnostic routine.

TEST SET.

Item of communications-electronics equipment which is used to locate faults and troubles in circuits and equipment.

TEST SHOE.

Testing implement which clips onto blocks on the distributing frame. Used to test inside or outside lines.

TEST STATION.

Installation where wire circuits may be tested and rearranged.

TEST TONE.

1. Tone used in identifying circuits.
2. Tone used for trouble location.
3. Source of testing energy.

TEST-TONE POWER, STANDARD.

(Reference: STANDARD TEST-TONE POWER.)

TESTING AREA.

Defined territory assigned to one force for trouble locations and routine maintenance tests.

TESTING BATTERY.

High-voltage, low-current source of energy used at test-boards and test desks for the operation of wheatstone bridges and voltmeters.

TESTING LEVEL.

Value of power used for reference represented by 0.001 watts working in 600 ohms; abbreviated dbm.

TETRODE.

Four-electrode electron tube containing an anode, a cathode, a control electrode, and one additional electrode, ordinarily in the nature of a grid.

TEX (OVERSEAS TELEPRINTER EXCHANGE SERVICE).

Service furnished the USAF by Radio Corporation of America.

TEXAS TOWER.

Radar installation on an off-shore platform.

TEST.

That part of a message which contains the thought or idea which the originator desires to be communicated.

TF (TASK FORCE).

Military force consisting of individuals or units, together with necessary equipment, temporarily grouped together to carry out a single precisely defined combat task or mission. Military force organized semi-permanently under a single tactical commander to carry out a series of special combat tasks. Special force organized to perform a special noncombat task.

TF (TRAFFIC ZONE).**TG (TASK GROUP).****TGT (TARGET).**

Thing or place to be hit or aimed at.

THALLIUM.

Element having an atomic number of 81 and an atomic weight of 204.39.

THALOFIDE.

Composition of thallium, oxygen, and sulphur possessing photoconductive properties.

THALOFIDE CELL.

Photoconductive type of photoelectric cell in which the active light-sensitive material is thallium sulphide in a vacuum. It has maximum response at the red end of the visible spectrum.

THERMAL.

General term sometimes used to cover all forms of thermoelectric thermometers, including series of couples, thermopiles, and single thermocouples.

THERMAL AGITATION.

1. Movements of the free electrons in a material. In a conductor, they produce minute pulses of

current. When these occur in the conductors of a resonant circuit at the input of a high-gain amplifier, the fluctuations are amplified together with signal currents and heard as noise.

2. Minute voltages arising from random electron motion, which is a function of absolute temperature, expressed in degrees Kelvin.

THERMAL AMMETER.

Instrument in which current is measured by sending it through a fine wire, which is heated. The resulting expansion or sag of the wire is used to deflect the meter pointer. It will measure either alternating current or direct current since both have the same heating effect. (Reference: HOT-WIRE AMMETER.)

THERMAL CUTOUT.

Overcurrent protective device which contains a heater element in addition to and affecting a fusible member which opens the circuit.

THERMAL DETECTOR.

Detector utilizing the heating effect of radio-frequency signals to cause detection, as in the barretter.

THERMAL FLASHER.

Electric device that opens and closes a circuit automatically at regular intervals owing to alternate heating and cooling of a bi-metallic strip that is heated by a resistance element in series with the circuit being controlled.

THERMAL INSTRUMENT.

Instrument that depends on the heating effect of an electric current, such as thermocouple instruments and hot-wire instruments.

THERMAL IONIZATION.

Ionization due to high temperature, as in the electrically conducting gases of a Bunsen-burner flame.

THERMAL MICROPHONE.

Micorphone depending for its action of the variation in the resistance of an electrically heated conductor that is being alternately increased and decreased in temperature by sound waves.

THERMAL NOISE.

1. Noise voltage generated in resistors due to minute currents caused by thermal motions of the conduction electrons.
2. Random noise in a circuit associated with the thermodynamic interchange of energy necessary to maintain thermal equilibrium between the circuit and its surroundings.

THERMAL RADIATION.

Radiation produced by the action of heat on molecules or atoms. Its frequency extends between the extremes of infrared and ultraviolet. Commonly known as heat.

THERMAL SENSING.

Erroneously used for passive microwave radiometry. (Reference AFM 100-50.)

THERMAL TELEPHONE RECEIVER.

Telephone receiver in which the temperature of a conductor is caused to vary in response to the current input, thereby producing sound waves as a result of the expansion and contraction of the adjacent air.

THERMAL TIME DELAY SWITCH.

Overcurrent protective device which contains a heater element and thermal delay.

THERMAL TUNING.

Adjusting the frequency of a cavity resonator by varying its shape by thermal expansion.

THERMAL-AGITATION VOLTAGE.

Potential difference produced in circuits due to the thermal agitation of the electrons in the conductors.

THEOREM.

General statement which has been proven or whose truth has been conjectured.

COMPENSATION. If an impedance ΔZ is inserted in a branch of a network, the resulting current increment produced in any branch in the network is equal to the current that would be produced at that point by a compensating voltage, acting in series with the modified branch, whose value is ΔZ , where I is the

original current that flowed where the impedance was inserted before the insertion was made.

FOSTER'S REACTANCE. The driving-point impedance of a finite two-terminal network composed of pure reactances is a reactance which is an odd rational function of frequency and which is completely determined, except for a constant factor, by assigning the resonant and anti-resonant frequencies. In other words, the driving point impedance consists of segments going from minus infinity to plus infinity (except that at zero or infinite frequency, a segment may start or stop at zero impedance). The frequencies at which the impedance is infinite are termed "poles", and those at which the impedance is zero are termed.

NORTHON'S. The voltage that will exist across an admittance Y , when connected to any two terminals of a linear network between which the short-circuit current previously was I and the admittance Y , is equal to the current I divided by the sum of Y and Y' .

RECIPROCITY. If an electromotive force E at one point in a network produces a current I at a second point in the network, then the same voltage E acting at the second point will produce the same current I at the first point.

SUPERPOSITION. The current that flows in a linear network, the potential difference that exists between any two points in such a network, resulting from the simultaneous application of a number of voltages distributed in any manner whatsoever throughout the network, in the sum of the component potential difference between the two points, that would be caused by the individual voltage acting separately.

THEVENIN'S. The current that will flow through an impedance Z' , when connected to any two terminals of a linear network between which there previously existed a voltage E and an impedance Z , is equal to the voltage E divided by the sum of Z and Z' .

THEORETICAL CUTOFF FREQUENCY.

Electric structure, a frequency at which, disregarding the effects of dissipation, the attenuation constant changes from zero to a positive value or vice versa.

THERMIC.

Pertaining to heat.

THERMION.

Ion, either positive or negative, which has been emitted from a heated body. Negative thermions are electronics (thermoelectrons).

THERMIONIC.

Pertaining to emission of electrons by heat.

THERMIONIC AMPLIFIER.

Circuit in which thermionic vacuum tubes are used to convert small voltage variations applied between the cathode and grid into large current variations in the plate circuit. It may have several successive stages of amplification, each with its own vacuum tube.

THERMIONIC CURRENT.

Current due to directed movements of thermions, such as the flow of emitted electrons from the cathode to the plate in a thermionic vacuum tube.

THERMIONIC DETECTOR.

Detector circuit utilizing a thermionic vacuum tube to deliver an audio-frequency signal when fed with a modulated radio-frequency signal.

THERMIONIC EMISSION.

1. Liberation of electrons due to the temperature rise of a cathode alone, quite independent of any other electrodes within the tube.
2. Electron emission from a solid body as a result of its elevated temperature. (Reference: EDISON EFFECT or RICHARDSON EFFECT.)

THERMIONIC INSTRUMENT.

Instrument utilizing the amplifying effect of one or more thermionic vacuum tubes.

THERMIONIC RECTIFIER.

Rectifier utilizing a thermionic vacuum tube to convert alternating current into unidirectional current.

THERMIONIC TUBE.

Vacuum tube in which one of the electrodes is heated for the purpose of causing electrons or ion emission from that electrode.

THERMIONIC VALVE.

British term for thermionic vacuum tube.

THERMIONIC VOLTMETER.

Vacuum-tube voltmeter in which the voltage to be measured is applied between the grid and cathode of a vacuum tube and the resulting change in plate current is interpreted in terms of voltage.

THERMIONIC WORK FUNCTION.

Energy required to transfer electrons from a given metal to a vacuum or other adjacent medium during thermionic emission.

THERMIONICS.

Branch of physics dealing with phenomena due to emission of electrons by heat.

THERMISTOR.

1. Temperature sensitive resistor employed in such a manner as to cause that property to perform some desired function. Used frequently in bridge circuits.
2. Symmetrical varistor which has an unusually high temperature coefficient of resistance.
3. Resistor for introducing a change of resistance with temperature.

THERMOAMMETER.

Ammeter that is actuated by the voltage generated in a thermocouple through which is sent the current to be measured. Used chiefly for measuring radio-frequency currents.

THERMOCOUPLE.

Device consisting of two dissimilar metals in physical contact, thereby forming a thermojunction across which a voltage is developed when the junction is heated. An instrument comprising a thermocouple, or thermocouples, connected to a meter calibrated in units of temperature is one of many types of pyrometers

(used to measure high temperatures). A thermocouple heated by RF current and connected to a dc meter serves as an RF ammeter when the meter is calibrated in current, and as an RF voltmeter when the meter is calibrated in volts.

THERMOCOUPLE AMMETER.

Ammeter which operates by means of a voltage produced by the heating effect of a current passed through the junction of two dissimilar metals. It is used for RF measurements.

THERMOCOUPLE INSTRUMENT.

Instrument in which one or more thermojunctions are heated directly or indirectly by an electric current, and supply a direct current which flows through the coil of a suitable dc mechanism, such as one of the permanent-magnet, moving-coil type.

THERMOCOUPLE THERMOMETER.

Device for measuring temperature which depends upon the variation of the contact electromotive force between two different metals or alloys with temperature. The thermocouple consists of a conductor of one metal or alloy which has attached to each end a conductor of a second metal or alloy for connecting to a measuring instrument, the arrangement being such that one of the junctions between the metals can be placed at the point where the temperature is to be measured and the second junction kept at a known temperature.

THERMOELECTRIC EFFECT.

Electromotive force that results from a difference of temperature between two junctions of dissimilar metals in the same circuit.

THERMOELECTRIC GENERATOR.

Device for converting heat energy into electric energy by heating thermojunctions.

THERMOELECTRIC INVERSION.

Temperature difference of a thermocouple is increased beyond a certain neutral point, the voltage decreases rather than increases and eventually reverses in polarity to cause reversal in the direction of the current.

THERMOELECTRIC JUNCTION.

Thermojunction, as in a thermocouple.

THERMOELECTRIC MANOMETER.

Manometer (pressure-measuring instrument) that depends on the variation of thermoelectromotive force (voltage due to heat) with pressure.

THERMOELECTRIC POWER.

Term used to denote the voltage produced by a metal in contact with a standard metal, such as lead, for a difference in temperature of 1°C between the junction and the rest of the circuit.

THERMOELECTRIC SERIES.

Series of metals arranged in the order of their thermoelectric powers.

THERMOELECTRICITY.

Electricity produced by the direct action of heat.

THERMOELECTROMOTIVE FORCE.

Voltage developed due to differences in temperature between parts of a circuit containing two or more different metals.

THERMOELECTRON.

Electron emitted from a heated body. (Reference: THERMION.)

THERMOELEMENT.

Device consisting of a thermocouple and a heating element arranged for measuring small currents.

THERMOGALVANOMETER.

Instrument for measuring small high-frequency currents by their heating effect, generally consisting of a dc galvanometer connected to a thermocouple that is heated by a filament carrying the current to be measured.

THERMOJUNCTION.

Point of contact of a pair of conductors forming a thermocouple.

THERMOMAGNETIC.

Pertaining to the effect of temperature on the magnetic properties of a substance, or to the effect of a magnetic field on the temperature distribution in a conductor.

THERMOMETER.

Instrument for measuring temperature. Electrical versions depend on the change in resistance of a material with temperature, on the voltage produced in a thermocouple, and on various other effect of temperature.

THERMOPHONE.

Electroacoustic transducer, such as a telephone receiver, headphone, or loudspeaker, in which the temperature of a conductor is caused to vary in response to the current input, producing sound waves as a result of the expansion and contraction of the adjacent air. (Reference: THERMAL TELEPHONE RECEIVER.)

THERMOPILE.

Group of thermocouples assembled to act jointly as a source of electric energy.

THERMOPLASTIC MATERIAL.

Plastic material that can be softened by heat and rehardened into a solid state by cooling. It may be remelted and remolded many times: Examples are polystyrene, cellulose nitrate, cellulose acetate, vinylcopolymers, methyl-methacrylate, etc.

THERMORELAY.

Device for amplifying small galvanometer deflections.

THERMOSETTING MATERIAL.

Plastic material that under application of heat and pressure will polymerize into a hard, infusible product. It will not soften to any extent on reheating and cannot be remelted or remolded: Examples are urea aldehydes, phenol aldehydes, cresol aldehydes, etc.

THERMOSTAT.

Mechanism to convert expansion of heated metal or fluid into movement and power sufficient to operate small devices, control electric circuits or small valves, etc. Can be set to operate at definite temperatures.

THERMOSTAT RELAY.

Form of temperature relay which receives its operating energy by thermal conduction or convection from the device being protected.

THICKNESS VIBRATION.

Vibration of a piezoelectric crystal in the direction of its thickness.

THIRD AXIS.

Name sometimes given to denote the Y or mechanical axis of a crystal.

THIRD HARMONIC.

Sine-wave component having three times the fundamental frequency of a complex wave.

THIRD WIRE.

1. Third conductor when associated with a pair.
2. Wire which connects to the sleeve of a plug or jack.

THOMSON BALANCE.

(Reference: KELVIN BALANCE.)

THOMSON COEFFICIENT.

Ratio of the voltage existing between two points on a metallic conductor to the difference in temperature of these points.

THOMSON EFFECT.

Voltage produced by temperature differences in a simple conductor, and the heat change associated with current flow between temperature differences.

THOMSON ELECTROMOTIVE FORCE.

Voltage that exists between two points that are at different temperatures in a conductor. Studied by William Thomson (Lord Kelvin), British scientist.

THORIATED FILAMENT.

Tungsten vacuum-tube filament to which a small amount of thorium has been added to improve emission. The thorium comes to the surface and is primarily responsible for the electron emission.

THORIUM.

Heavy, radioactive element which cannot of itself maintain a chain reaction, but which can be used with uranium for that purpose. It can in effect be used to stretch the uranium supply. It is a metal that emits electrons liberally when heated. Sometimes incorporated in tungsten filaments of vacuum tubes to form an emitting layer of thorium at the surface of the filament.

THORIUM SERIES.

One of the principal radioactive series beginning with thorium.

THORN NEEDLE.

Type of soft playback point or phonograph needle similar to cactus or fiber needle.

THORON.

Radioactive isotope produced by the disintegration of thorium.

THREAD.

Material removed from a phonograph disk by the recording stylus during sound recording. (Reference: CHIP.)

THREAT WARNING.

Report from the NORAD Combat Operations Center which disseminates early-warning information from Dew, Mid-Canada, and Pine Tree lines to lower echelons of the air defense system.

THREE - ADDRESS CODE.

(Reference: INSTRUCTION CODE.)

THREE-PHASE CIRCUIT.

Combination of circuits energized by alternating electromotive forces which differ in phase by $1/3$ cycle or 120 electrical degrees.

Note: In practice, the phases may vary several degrees from the specified angle.

THREE-PHASE CURRENT.

Current delivered through three wires, with each wire serving as the return for the other two and with the three current components differing in phase successively by $1/3$ cycle or 120 electrical degrees.

THREE-PHASE THREE-WIRE SYSTEM.

System of ac supply comprising three conductors between successive pairs of which are maintained alternating differences of potential successively displaced in phase by $1/3$ cycle.

THREE-PHASE FOUR-WIRE SYSTEM.

System of ac supply comprising four conductors, three of which are connected as in a three-phase, three-wire system, the fourth being connected to the neutral point of the supply, which may be grounded.

THREE-PHASE SEVEN-WIRE SYSTEM.

System of ac supply from groups of three single-phase transformers connected in Y so as to obtain a three-phase four-wire grounded neutral system of a higher voltage for power, the neutral wire being common to both systems.

THREE-POLE SWITCH.

Arrangement of three single-pole switches coupled together to open three circuits simultaneously.

THREE-WIRE SYSTEM.

System of electric supply comprising three conductors, one of which (known as the neutral wire) is maintained at a potential midway between the potential of the other two (referred to as the outer conductors).

Note: Part of the load may be connected directly between the outer conductors, the remainder being divided as evenly as possible into two parts, each of which is connected between the neutral and one outer conductor. There are thus two distinct voltages of supply, the one being twice the other.

THRESHOLD.

Point at which an effect is first produced, observable, or otherwise indicated.

THRESHOLD FREQUENCY.

Frequency at which the quantum energy is just sufficient to release photoelectrons from a given surface. (Reference: CRITICAL FREQUENCY.)

THRESHOLD LIGHTS.

Lights placed across the ends of a runway, landing strip or channel to indicate the usable limits thereof.

THRESHOLD OF AUDIBILITY.

Loudness level at which sound at a particular frequency can barely be heard. (Reference: THRESHOLD OF HEARING.)

THRESHOLD OF FEELING.

Loudness level at which sound at a particular frequency can barely be felt.

THRESHOLD OF HEARING.

Threshold of audibility.

THROAT.

Part of the flare or tapered parallel plate guide immediately adjacent to and connected to the main run of waveguide.

THROAT MICROPHONE.

Microphone normally actuated by mechanical contact with the throat.

THROAT OF A HORN.

Smaller cross-sectional area.

THROW-OUT SPIRAL.

Black spiral groove at the end of a recording, generally at a pitch that is much greater than that of the recorded grooves.

THROWING POWER.

Measure of the adaptability of an electrolytic solution to deposit metals uniformly on a cathode of irregular shape during electroplating.

THRU REPEATER.

Microwave repeater that is not equipped to provide for connections to any local facilities, other than the service channel. (Reference: REPEATER STATION.)

THRUST.

Propelling force exerted on a rocket by its exhaust.

THUMP.

Interference, heard in a telephone circuit, from a superimposed telegraph circuit.

THUNDERSTORM DAY.

Local calendar day on which thunder is heard. It is recorded as such regardless of the actual number of thunderstorms occurring on that day. When a storm begins before midnight and ends after midnight, two thunderstorm days are recorded. Lightning without thunder is not recorded as a thunderstorm.

THURY REGULATOR.

Automatic voltage regulator in which the controlling shaft of the field rheostat is rotated in either direction by a pair of solenoids, operating pawls acting on a ratchet wheel mounted on the shaft. The solenoids are so actuated by

the generator output voltage that this voltage is maintained essentially constant despite variations in load.

THYRATRON.

Hot-cathode gas-discharge tube in which one or more electrodes are employed to control electrostatically (with grids) the starting of the unidirectional current flow. Used as controlled rectifiers to supply variable direct voltage or current from an ac source, as inverters to supply ac power from a dc supply, as frequency changers, and as contractors for electronic switches that close a circuit for a definite number of cycles in welding.

THYRATRON INVERTER.

Inverter circuit employing thyatron tubes to convert dc power to ac power.

THYRATRON STROBOSCOPE.

Special thyatron tube used to provide intense flashes of light, suddenly and periodically, by discharging a capacitor across the tube at intervals controlled by the grid voltage. Used as a stroboscope for study of moving objects and measurements of their frequency or speed.

THYRITE.

Silicon-carbide ceramic material having nonlinear resistance characteristics. Above a critical voltage, the resistance falls considerably.

TI (TRACK INITIATOR).

Airman in the Direction Center Air Surveillance Branch of a SAGE system responsible for the manual initiation of tracks.

TIAS (TREATY AND INTERNATIONAL AGREEMENT SERIES).

Western Union system for transmission and printing of tickets by facsimile. Travelers may quickly obtain facsimile duplicates of tickets or reservations in any office served by the system, although the original ticket may be miles away. Facsimile reproductions are printed in eight seconds.

TICKLER.

Small coil connected in series with the plate circuit of an electron tube and inductively coupled to a grid-circuit coil in order to establish feedback or regeneration in a radio circuit. Used chiefly in regenerative detector circuits.

TIE**TIE POINT.**

Insulated terminal to which two or more wires may be anchored for support.

TIE TRUNK.

Telephone line or channel directly connecting two private branch exchanges.

TIE WIRES.

Short pieces of wire used to tie open line wires to insulators.

TIER ARRAY.

Array of antenna elements, one above the other.

TIES.

1. Electrical connections or straps.
2. Tie wires.

TIGHT.

Suffix indicating that apparatus is so-constructed that the inclosing case will exclude the specified material. For example; watertight, dust-tight, and the like.

TIGHT COUPLING.

1. Degree of coupling in which practically all of the magnetic lines of force produced by one coil, link a second coil.
2. More than enough coupling to give maximum transfer of energy at the resonant frequency. Greater than optimum coupling.

TILE.

Baked clay or terra-cotta tube or duct. Used as an underground conduit.

MULTIPLE. Several tile ducts combined in one tile structure.

SPLIT. Partially round, usually at least half round, tile used to cover a cable already in place.

TILT ERROR.

(Reference: ANTENNA TILT ERROR.)

TILTING.

1. Forward inclination of the wave front of radio waves traveling along the ground. Its value depends on the electrical constants of the ground.

2. Changing the angle of a television camera to follow a moving object being televised.

3. Changing the vertical angle of a directional antenna.

TIME.

1. Reckoning of duration; the system or process by which man measures this reckoning.

2. Interval or period between the beginning and end of an action or event, as in flying time, or the jet plane has shrunk both time and space.

CENTRAL STANDARD. Mean time based on the 90th meridian, west longitude.

EASTERN STANDARD. Mean time based on the 75th meridian, west longitude.

GREENWICH MEAN. Mean solar time at the meridian of Greenwich.

MOUNTAIN STANDARD. Mean time based on the 105th meridian, west longitude.

PACIFIC STANDARD. Mean time based on the 120th meridian, west longitude.

PIPELINE. Number of days which elapse between the time stock is requisitioned and received.

PULSE DECAY. Interval of time required for the trailing edge of a pulse to decay from 90 percent to 10 percent of the pulse amplitude.

PULSE RECURRENCE. Time elapsing between the start of one transmitted pulse and the next pulse or the reciprocal of the pulse repetition frequency.

PULSE RISE. Interval of time required for the leading edge of a pulse to rise from 10 percent to 90 percent of the pulse amplitude.

RE-ACQUISITION. Time it takes a tracking radar operator to relock the radar on the target once the automatic tracking mechanism has been disengaged.

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RECOVERY. Time required, after the end of the radar transmitted pulse, for recovery to a specified relation of receiving sensitivity or received signal to the normal value.

REVERBERATION. Time required for the average sound-energy density, originally in a steady state, to decrease, after transmission from the source has ceased, to one-millionth of its initial value (60 db).

SMOOTHING. Time interval essential to the computer of a fire control radar mechanism to smooth the incoming data so that accurate fire may result.

TIME BASE.

1. Straight line traced by the electron beam on a cathode-ray tube screen in the absence of radar signals or noise, along which range is measured. (Reference: SWEEP.)

2. Voltage generated by the sweep circuit or circuits in the radar indicator. The wave shape of the voltage generated in such as to cause to be described on the screen of the cathode-ray tube a trace which is either linear with respect to time, or, if nonlinear, is still at a known timing.

TIME CONSTANT.

Time required for an exponential quantity to change by an amount equal to 0.632 times the total change that will occur. In a capacitor-resistor circuit, it is the number of seconds required for the capacitor to reach 63.2 per cent of its full charge after a voltage is applied. In an inductor-resistor circuit, it is the number of seconds required for the current to reach 63.2 per cent of its final value. The time constant in seconds of an inductor having an inductance L in henrys and resistance R in ohms is L/R . The time constant of a capacitor having a capacitance C in farads in series with a resistance R in ohms is RC .

TIME CONSTANT OF FALL.

Time required for the pulse to fall from 70.7% to 26.0% of its maximum amplitude excluding spike.

TIME DIVISION MULTIPLEX.

Process or device in which each signal channel modulates a separate pulse subcarrier, the pulse subcarrier being spaced in time so that the summation of all the subcarriers is a series of pulses and the means for selection and demodulation of each signal channel on the basis of its time of occurrence. (Reference: PULSE-TIME.)

Note. Time division permits the transmission of two or more signals over a common path by using different time intervals for the transmission of the intelligence of each message signal.

TIME DIVISION MULTIPLEXING.

Process of transmitting two or more signals over a common path by using different time intervals for different signals.

TIME GATE.

Tube or circuit, which gives output only during chosen time intervals.

TIME LAG.

1. Interval of time between application of any force and full attainment of the resultant effect.
2. Time interval between two phenomena.

TIME LAG OF IMPULSE FLASHOVER.

Time between the instant when the voltage of the impulse wave first exceeds the power-frequency flashover crest voltage and the instant when the impulse flashover causes the abrupt drop in the testing wave.

TIME OF DAY.

Service whereby a customer can call a designated number and be informed of accurate clock time.

TIME OF DELIVERY.

Date and time at which a message is delivered to the addressee.

TIME OF DISPATCH.

Date and time at which a communication is dispatched to an addressee or communication agency. (Not to be used in connection with messages transmitted by telecommunications.)

TIME OF ORIGIN.

Time at which a message is released for transmission. (Reference: DATA-TIME-GROUP.)

TIME OF RECEIPT.

Date and time at which a communication agency completes reception of a message transmitted to it by another communication agency.

TIME OF TRANSMISSION.

Date and time at which a message is transmitted by telecommunications.

TIME PHASE.

Reaching corresponding peak values at the same instants of time, though not necessarily at the same points in space.

TIME QUADRATURE.

Differing by a time interval corresponding to $1/4$ the time of one (1) cycle of the frequency in question.

TIME SIGNALS.

Time-controlled radio signals broadcast at regular intervals each day on a number of different frequencies by government-operated radio stations.

TIME SWITCH.

Clock-controlled switch used to open or close a circuit at one or more predetermined times.

TIME TO IMPULSE FLASHOVER.

Time between the initial point of the voltage impulse causing flashover and the point at which the abrupt drop in the voltage impulse takes place.

TIME UNDERVOLTAGE PROTECTION.

Effect of a device operative on the reduction of failure of voltage to cause and maintain the interruption of power in the main circuit if the voltage reduction continues for more than a predetermined time interval.

TIME ZONE CO-ORDINATES.

Twenty-four equidistant divisions of the earth's surface based on co-ordinates of longitude east and/or west. Co-ordinate divisions are straight lines from pole to pole and will not, conform

to time zone delineations over land areas (continents). They may, however, be used to determine time zones of islands and ocean areas. Each hour of time is thus related to approximately 15° of distance.

TIME ZONE LETTERING SYSTEM.

Twenty-five time zone areas identified by use of letters. Beginning with the letter A at Zone 13 ($7^\circ 30' - 22^\circ 30' E$), the letters extend eastward through M. Zone number 12 ($7^\circ 30' E - 7^\circ 30' W$) is designated Z. The letter system then from Z, beginning with N is omitted. The conversion chart can thus be used whenever maps or publications use the lettering system to identify the time zones.

TIME ZONE NUMBERING SYSTEM.

Twenty-five time zone areas numbered from 0 through 24 (0 and 24 being actually the same zone) beginning with 0 at the International Date Line and extending eastward circumventing the earth's surface to the 24th zone or 0 zone again. Certain publications and maps use this system for identifying the 24 time zones. For such publications, the conversion chart may be used for computing time or time differences.

TIME ZONES.

Description and designation letters assigned to time zones are as follows:

Zone boundaries	Description	Designation letters
$7\frac{1}{2}W$ to $7\frac{1}{2}E$	0	Z
$7\frac{1}{2}E$ to $22\frac{1}{2}E$	-1	A
$22\frac{1}{2}E$ to $37\frac{1}{2}E$	-2	B
$37\frac{1}{2}E$ to $52\frac{1}{2}E$	-3	C
$52\frac{1}{2}E$ to $67\frac{1}{2}E$	-4	D
$67\frac{1}{2}E$ to $82\frac{1}{2}E$	-5	E
$82\frac{1}{2}E$ to $97\frac{1}{2}E$	-6	F
$97\frac{1}{2}E$ to $112\frac{1}{2}E$	-7	G
$112\frac{1}{2}E$ to $127\frac{1}{2}E$	-8	H
$127\frac{1}{2}E$ to $142\frac{1}{2}E$	-9	I
$142\frac{1}{2}E$ to $157\frac{1}{2}E$	-10	K
$157\frac{1}{2}E$ to $172\frac{1}{2}E$	-11	L
$172\frac{1}{2}E$ to 180	-12	M
$7\frac{1}{2}W$ to $22\frac{1}{2}W$	+1	N

22½W to 37½W....	+2	O
37½W to 52½W....	+3	P
52½W to 67½W....	+4	Q
67½W to 82½W....	+5	R
82½W to 97½W....	+6	S
97½W to 112½W...	+7	T
112½W to 127½W..	+8	U
127½W to 142½W..	+9	V
142½W to 157½W..	+10	W
157½W to 172½W..	+11	X
172½W to 180.....	+12	Y

Note. 1. The exact zone boundaries sometimes deviate slightly to accommodate national boundaries, etc.

2. Letter N is also used to designate zone -13; this is to provide for a ship in zone -12 keeping Daylight Saving Time.

3. GMT is indicated by the suffix Z.

4. For time midway between zones, both letters are used.

TIME HANDED IN. Time (day, hour, and minute) at which a communication agency receives a message for transmission.

TIME-CURRENT CHARACTERISTICS OF FUSE.

Relation between the rms alternating current of direct current and the time for the fuse to perform the whole or some specified part of its interrupting function.

Note. The time-current characteristic is usually shown as a curve.

TIME-DELAY CIRCUIT.

Circuit that delays the transmission of an impulse, signal, or performance; a definite desired period of time.

TIME-DELAY RELAY.

Relay in which there is an appreciable interval of time between energizing of the coil and movement of the armature or between de-energizing of the armature. Examples are quick-acting relays, slow-acting relays, and slow-release relays.

TIMEFAX A.

Recording paper, used in facsimile, which is

used to make electrosensitive recordings. The record sheet serves as a master for duplication by the gelatin transfer or hectograph process.

TIMEFAX NDA.

Dry electrosensitive facsimile recording paper designed to record in response to an electric current.

TIMER.

1. Assembly of electric circuits and associated equipment which provides the following: Trigger pulses, sweep circuits, intensifier pulses, gate voltages, blanking voltages, and power supplies. An important feature of a timer is that the various output events are synchronized with respect to each other.

2. Part of an electronic circuit which starts pulse transmission and synchronizes it with the beginning of indicator sweep, timing of gates, range markers, etc.

3. Special clock mechanism or motor-operated device used to perform switching operations at predetermined intervals of time.

4. Part of the radar set that initiates pulse transmission and synchronizes this with the beginning of indicator sweeps, timing of gates, range markers, etc.

TIMING AXIS OSCILLATORS.

Oscillator circuit that generates a sawtooth voltage for the horizontal deflecting plates or horizontal deflecting coils of a cathode-ray tube, an oscilloscope, or other instrument. It makes the spot on the screen retrace its path many times per second so as to produce a stationary image.

TIMING RELAY.

Form of auxiliary relay used to introduce a definite time delay in the performance of a function.

TINKERTOY.

Project conducted by the National Bureau of Standards, under the sponsorship of the Navy Bureau of Aeronautics, for the development of systems for modular design of electronics and mechanized production of electronics (MDE-

MPE). The MDE-MPE system starts with raw or semi-processed materials and automatically manufacturers ceramic base wafers, dielectric elements for capacitors, and adhesive tape resistors. Conducting circuits and capacitors are printed, and resistors, capacitors and other component parts are mounted on standard, unifrom steatite wafers. These wafers are stacked like building blocks to form modules that perform all the functions of one or more electronic stages. Assembly of the modules can be accomplished automatically. These modules are adaptable to possible automatic mounting on printed circuit components of electronic equipment. A pilot plant, operated by a commercial contractor and employing the principles of this system, is designed to produce 1000 finished and inspected modules per hour.

TINNED.

Covered with metallic tin to permit or facilitate soldering.

TINNED WIRE.

Copper wire that has been coated during manufacture with a layer of tin or solder to prevent corrosion and simplify soldering of connections.

TIP.

Tip of a plug is the contacting part at the end of the plug. (Reference: AFM 100-50.)

SILK AND COTTON. Tip cable with conductors insulated with silk and cotton wrappings.

SPADE. Notched flat metal lug, connected to cord or wire ends to permit them to be held under binding screws.

TIP CABLE.

Cable having the conductors insulated with silk and cotton and used to bring outside cables into a building.

TIP JACK.

Small single-hole jack into which fits a single-pin contact plug. (Reference: PUP JACK.)

TIP SIDE.

Conductor of a circuit which is associated with the tip of a plug, or the top spring of a jack.

Note. By extension, it is common practice to designate by these terms the conductors having similar functions or arrangements in circuits where plugs or jacks may not be involved.

TIRBS (TACTICAL RADAR-INFRARED BOMBING SUB-SYSTEMS).

TIRILL REGULATOR.

Automatic voltage regulator in which a vibrating-contact device short-circuits the shunt rheostat of a generator intermittently in accordance with the action of relays responsive to the voltage during load variations. In effect, it varies the average value of field resistance by varying the interval of time that this resistance is short-circuited.

TK (TANK).

1. Container or reservoir on aircraft, or other powered vehicle, from which liquid fuel is fed into the engine or engines.
2. Container built into the cargo space of an aircraft, or other vehicle, and used for the stowage and transportation of bulk liquid.
3. Armored, full-tracked vehicle.

TM (TECHNICAL MANUAL).

Army publication approximately corresponding to the Air Force Technical Order. It contains detailed information on technical procedures including instructions on the operation, handling, maintenance, and repair of equipment.

TM (TRACK MONITOR).

Airman in the Direction Center Air Surveillance Branch of a SAGE system, responsible for assisting the computer when tracking trouble exists or can be anticipated.

TM (TRANSVERSE MAGNETIC) WAVE.

Transverse magnetic wave, one of the two classes of waves that can be sent through wave guides. A TM wave possesses longitudinal electric force, with the magnetic vector everywhere perpendicular to the direction of wave propagation. Subscript numerals have the same significance

as for TE waves. TM waves are also called E waves. Thus, $TM_0, 1$ and $E_0, 1$ waves are identical.

TMS (TRACK MONITOR SPECIAL).

1. Airman in the Direction Center Air Surveillance Branch of a SAGE center responsible for assisting the computer in handling lost tracks.
2. Transmission measuring set.

TN (TRACK NUMBER).

Combination of letters and numbers to specify individual tracks in air defense operations.

TNG (TRAINING).

1. Process by which a person or animal is subjected to a kind of direction and restraint through which he learns to do specific things.
2. Process by which a crew or other group of persons gains unity by learning to do things together.

TO. (TECHNICAL ORDER).

Publication that supplies specific technical directions and information with respect to the inspection, storage, operation, modification, and maintenance of given equipment.

TO (TRACKING OFFICER).

Officer responsible to the Air Surveillance Officer for track initiation and track monitoring.

T.O. (AIR FORCE TECHNICAL ORDER).

(Reference: TECHNICAL ORDER.)

T.O. (TABLE OF ORGANIZATION)

AF publication or table prepared by the Department of the Air Force that prescribes the organizational structure and personnel for one of several like units, i.e. standardized units, either combat or service, which have fixed missions and workload requirements. Often written T/O.

TO-FROM INDICATOR.

Instrument which shows whether the numerical reading of an omni-bearing selector for an on course indication of the deviation indicator represents the bearing toward or away from an omni-range.

TOC (TECHNICAL ORDER COMPLIANCE).**TOD (TIME OF DELIVERY).**

Date and time at which a message is delivered to the addressee.

TOEPLER-HOLTZ MACHINE.

Type of static machine used for charging Leyden jars and producing sparks, consisting of fixed and rotation glass disks bearing pieces of tin foil. There are two sets of brushes and the usual collector.

TOGGLE SWITCH.

Two position switch which may be flipped from side to side to open or close circuits.

TOKEN.

Russian V-beam high powered radar.

TOLERANCE.

1. Maximum error, or variation from the standard permissible in a measuring instrument.
2. Maximum electrical or mechanical variation from specifications which can be tolerated without impairing the operation of a device.

TOLL.

1. Charge made for a connection beyond an exchange boundary.
2. Any part of telephone plant, circuits, or service for which toll charges are made.

TOLL BOARD.

Switchboard used primarily for establishing connections over toll lines.

TOLL CABLE.

Telephone cable or channel between two central offices in different exchanges.

TOLL CALL.

Telephone call to points beyond the area within which telephone calls are covered by a flat monthly rate or are charged for on a message unit basis.

TOLL CENTER.

1. Toll office which serves as a switching point between local exchanges and the long distance telephone network.

2. Operating office for completing toll calls, which handles all of its own traffic and may handle all or some of other tributary offices.

TOLL LINE.

Telephone line or channel between two central offices in different exchanges.

TOLL OFFICE.

Central office primarily arranged for terminating toll lines, toll switching trunks, recording trunks and recording-completing trunks and for their interconnection with each other as necessary over toll lines.

TOLL STATION.

Public telephone station connected directly to a toll telephone switchboard.

TOLL TERMINAL LOSS.

That part of the overall transmission loss on a toll connection which is attributal to the facilities from the toll center through the tributary office to and including the subscriber's equipment.

TOM. (TAKEOFF MONITOR).

Electronic device which automatically warns a pilot when his aircraft is failing to "make good" during takeoff run.

TOMCIS (TEST OF MULTIPLE CORRIDOR IDENTIFICATION SYSTEM).

TONE.

Sound giving a definite sensation of pitch.

BUSY. Interrupted low tone returned to the subscriber as an indication that the called party's line is busy.

BUSY-BACK. Tone returned to a calling party to indicate that the line called is in use.

DIAL. Low tone returned to the calling subscriber as an indication that the dial mechanism is ready to receive a number.

GROUP BUSY. High tone connected to the jack sleeves of an outgoing trunk group as an indication that all trunks in group are busy.

HIGH-FREQUENCY. Inaudible tone which is used with a detector for identifying cable pairs without disturbing service.

RINGING. Tone sent to the calling party to indicate that the called line is being signalled.

SUSTAINED. 1. Audible sound, many different tones, electrically generated and designed for special uses are employed in telephony.

2. Source of testing energy. The energy may or may not be calibrated with respect to level or frequency.

TEST. 1. Tone used in identifying conductors.

2. Tone used for trouble location.

3. Source of testing energy.

TROUBLE. Interrupted high tone used as an indication that the called line is out of order.

TONE CHANNEL.

Signaling circuit utilizing a frequency (on-off or frequency shift) as a means of transmission (usually audio frequency).

TONE CONTROL.

1. Means for altering the frequency response at the audio-frequency output of a circuit, particularly of a radio receiver or hearing aid, for the purpose of obtaining a quality more pleasing to the listener.

2. Method of emphasizing either low or high tones, at will, in an audio-frequency amplifier.

TONE CONVERTER.

Instrument designed to accept audio tone frequencies; it converts them and passes them on as dc impulses.

TONE GENERATOR.

Device for providing an audio-frequency current suitable for signaling purposes or for testing audio-frequency equipment.

TONE KEYER.

Instrument designed to accept dc impulses; it converts them and passes them on as an audio tone.

tone LOCALIZER.

Localizer which transmits two modulation frequencies for amplitude comparison.

tone MODULATION.

Type of code-signal transmission obtained by causing the radio-frequency carrier amplitude to vary at a fixed audio frequency.

tone REVERSAL.

Distortion of the recorded copy in facsimile which causes the various shades of black and white not to be in the proper order. This may be a complete tone reversal where the black area prints out as white and the white area prints out as black, or it may be a partial tone reversal where some shade of gray on the subject copy prints as white, and both lighter and darker shades of gray print as a light gray.

tone WHEEL.

Rotating apparatus used in radiotelegraphy for converting incoming continuous waves to audio-frequency beats that can be reproduced as audible sounds. A highspeed interrupter, consisting of a contact brush pressing against a wheel having many fine teeth separated by insulating material, is driven at such speed that the frequency of the interruptions differs from that of the incoming radio waves, producing the required beat frequency.

tone-MODULATED WAVES.

Waves obtained from continuous waves by amplitude modulating them at audio frequency in a substantially periodic manner.

TONLAR (TONE OPERATED NET LOSS ADJUSTER).

System for stabilizing the net loss of a telephone circuit by means of a tone transmitted between conversations.

TOP CAP.

Vacuum-tube terminal in the form of a metal cap positioned at the top of the tube and connected to one of the electrodes.

TOP-LOADED VERTICAL ANTENNA.

Vertical antenna so constructed that because of

its greater size at the top, there results modified current distribution giving a more desirable radiation pattern in the vertical plane.

TOO. (TIME OF ORIGIN).

Time at which a message is released for transmission.

TOOL BELT.

Leather strap worn about the waist with loops and pockets for holding hand tools.

TOR (TIME OF RECEIPT).

Date and time at which a communication agency completes reception of a message transmitted to it from another communication agency.

TORCH.

Portable furnace used for heating and melting lead.

TORN TAPE RELAY.

Method of receiving messages in tape form, breaking the tape, and retransmitting the message in tape form.

TOROID.

1. Coil which is formed by wrapping a conventional coil about an axis perpendicular to its longitudinal axis.
2. Doughnut-shaped coil.

TOROIDAL COIL.

Coil wound on a closed circular core. A helical spring bent around into a closed circuit may be conceived as a single layer air core toroidal coil. The use of multiple layer toroidal windings on closed rings of high grade ferromagnetic materials is a recent advance of transformer and inductor science.

TORP (TORPEDO).**TORQUE OF AN INSTRUMENT.**

Turning moment produced by the electrical quantity to be measured acting through the mechanism. This is also termed the deflecting torque and in instruments having control systems, is opposed by the controlling torque, which is the turning moment produced by the mechanism of the instrument tending to return it to a fixed position. Torque is expressed in millimetergrams.

The particular value of the torque for the condition of full-scale deflection should be designated FULL-SCALE TORQUE, and should be accompanied by a statement of the angle corresponding to this deflection.

TORQUE UNIT.

Unit attached to the base of the spinner in H2X (AN/APS-15 radar) which turns the stator of a synchro so that the direction of the antenna is always referred to true north. Used for azimuth stabilization of the PPI pattern.

TORSIOMETER.

Instrument for measuring the amount of power being transmitted by a rotating shaft.

TORSION GALVANOMETER.

Galvanometer in which the force between the fixed and moving systems is measured by the angle through which the supporting head of the moving system must be rotated to bring the moving system back to its zero position.

TORSION PENDULUM.

Pendulum weight suspended by a wire. Wire and pendulum rotate due to torsion (twisting) of the wire.

TORSION-STRING GALVANOMETER.

Sensitive galvanometer in which the moving system is suspended by two parallel fibers that tend to twist around each other.

TORSOMETER.

Instrument for studying the elastic behavior of solids under torsion, especially by optical methods.

TOT (TIME OF TRANSMISSION).

Date and time at which a message is transmitted by telecommunications.

TOTAL CAPACITANCE.

Complete circuit capacitance. Includes fixed, stray, and interelectrode capacitance.

TOTAL DISTORTION.

Total of all forms of signal distortion is cumulative and known as the total distortion of that signal.

TOTAL LOSSES OF A TRANSFORMER.

Losses represented by the sum of the no-load losses and the load losses.

TOTAL LUMINOUS FLUX.

Total light emitted by a light source in all directions.

TOTAL-HARMONIC DISTORTION.

Ratio of the power at the fundamental frequency measured at the output of the transmission system considered, to the power of all harmonics observed at the output of the system because of its nonlinearity, when a single frequency signal of specified power is applied to the input of the system. It shall be expressed in db.

TOURMALINE.

Strongly piezoelectric natural or synthetic crystal.

TOWA (TERRAIN AND OBSTACLE WARNING AND AVOIDANCE SYSTEM).

TOWER.

Metal structure used as a transmitting antenna, or used with another such structure to support antenna wire

TOWER LOADING.

Load placed on a tower by its own weight, the weight of the wires with or without ice covering, the insulators, the wind pressure normal to the line acting both on the tower and the wires and the pull from the wires.

TOWER RADIATOR.

Metal structure used as a transmitting antenna.

TOWNSEND CORONA DISCHARGE.

Electrical discharge in a gas at moderate pressure (above about 0.1 millimeter of mercury). It is free from space charges.

TP (TELEPHONE).

Combination of apparatus for converting speech energy into electrical waves, transmitting the electrical energy to a distant point, and there converting the waves into audible sounds.

TPC (TELECOMMUNICATIONS PLANNING COMMITTEE).

tpdt (TRIPLE-POLE, DOUBLE-THROW).

TPR.

Telegraph (teletypewriter) designation for a two-way polar repeater.

TR (TRANSMIT-RECEIVE) BOX.

Transmit-receive resonant cavity to keep transmitted pulse out of receiver. (Reference: DUPLEXER, TR(TRANSMIT-RECEIVE)UNIT.)

TR (TRANSMIT-RECEIVE) SWITCH.

Device used to prevent energy reaching the receiver during transmission. It may be used in radar sets using either separate or common transmitting and receiving antennas.

TR (TRANSMIT-RECEIVE) TUBE.

Switching tube, usually gas-filled, which is generally used in radio-frequency systems where a transmitter and receiver make use of a common antenna.

TR (TRANSMIT-RECEIVE) UNIT.

Device that incorporates a transmit-receive switch and sometimes a transmitter blocker. It is used only in sets using a common transmitting and receiving antenna.

TRACALS (TRAFFIC CONTROL, APPROACH AND LANDING SYSTEM).

Fully automatic terminal and landing systems.

TRACE.

1. Pattern that appears on the screen of a cathode-ray tube.
2. Visible line or lines appearing on the screen of a cathode-ray tube as a result of the deflection of the electron stream.

TRACE INTERVAL.

Interval corresponding to the direction of sweep used for delineation.

TRACER.

Thread of contrasting color woven into the insulation of a wire for identification purposes.

TRACERS.

Radioactive substances which are used to observe reactions.

TRACK.

1. To observe and mark on a chart the successive

positions of a moving target.

2. To keep a gun properly aimed, or to point continuously a target-locating instrument at a moving target.

3. Actual path of an aircraft above, or a ship on, the surface of the earth. The course is the path which is planned; the track is the path which is actually taken.

4. Air defense term used to describe a computer-generated display representing the position (either actual or dead-reckoned) of an airborne object as well as its speed and heading.

5. Portion of a moving-type storage medium which is accessible to a given reading station. (Reference: BAND.)

TRACK BREAKING DECEPTION.

Classified definition. (Reference: AFM 100-50.)

TRACK CLASSIFICATION.

Classification of those tracks requiring identification under current directives in the identification branch or air defense by probable identity. Tracks may be classified as friendly, hostile, unknown, faker, special, round robin, key-stone, or big photo.

TRACK HISTORY.

Display of present and past positions of a track.

TRACK HOMING.

Following a line of position known to pass through an objective.

TRACK INITIATOR.

Airman in the Direction Center Air Surveillance Branch responsible for the manual initiation of tracks.

TRACK MONITOR.

Airman in the Direction Center Air Surveillance Branch responsible for assisting the computer when tracking trouble exists or can be anticipated.

TRACK MONITOR SPECIAL.

Airman in the Direction Center Air Surveillance Branch responsible for assisting the computer in handling lost tracks.

TRACK NUMBER.

Combination of letters and numbers to specify individual tracks in air defense operations.

TRACK-WHILE-SCAN.

System utilizing electronic computer techniques, which uses raw radar data to track an assigned target; computes target velocity; uses the next radar return for the target and correlates with the actual echo received; extrapolates the track during fades for period of time specified by design, and does not interfere with radar scanning rate. Two typical systems:

1. CARTRAC, analogue TWS channel, output in Cartesian coordinates, for use in multi-radar systems
2. ANTRAC, analogue TWS channel whose output is in polar coordinates.

TRACKING.

1. Process of keeping a radar beam, or the cross hairs of an optical system set on a target and visually determining the range of the target simultaneously.
2. Maintenance of proper frequency relations in circuits designed to be simultaneously varied by gang operations.
3. Condition in which all tuned circuits in a receiver follow accurately, throughout the tuning range, the frequency indicated by the tuning dial.

TRACKING MERIT.

Computer-generated assessment (good, fair, or poor) of the degree of reliability which the automatic-tracking function places on its performance in relation to an individual established track.

TRACKING OFFICER.

Officer responsible to the Air Surveillance Officer for track initiation and track monitoring in a SAGE system.

TRACKING SPOT.

Moving spot on a radar indicator for target indication.

TRACKING STATUS.

Manual or computer-generated existing state or condition of a track.

TRACKING SUPERVISOR.

Noncommissioned officer in the Direction Center Air Surveillance Branch who supervises the track monitors.

TRACKING TECHNICIAN.

Noncommissioned officer who assists the tracking officer in a SAGE system.

TRADIC (TRANSISTOR-DIGITAL-COMPUTER).

Computer designed to operate satisfactorily in aircraft flying at supersonic speeds. Vacuum tube failure and heat are eliminated by use of transistors. Approximately 800 are used. Power required for operation is less than 100 watts. Approximately 11,000 germanium diodes are employed in the computer. These serve as one-way switches and are capable of operating thousands of times faster than mechanical counterparts. The computer can do 60,000 additions or subtractions, or multiplications or divisions, in a second. It can provide the answer to a complex problem in about 15 thousandths of a second and can handle simultaneously as many as thirteen 16-digit numbers. Mathematical instructions are placed into the computer by means of a plug-in unit resembling a small breadboard. Plug-in units are set up beforehand with interconnecting wires to represent problems at hand. Numbers to be processed are put into the computer by means of simple switches. In its final form the computer should occupy less than three cubic feet of space. It may perform such chores as fire control as well as the bombing and navigational computations, which are usually done by analog type computers, thus making possible the accuracy of digital type computers for this work.

TRAFFIC.

1. Transmitted and received messages.
2. Messages handled by communication stations or by amateur stations.
3. The number of circuits of the various groups which are in use during the busy hour.

TRAFFIC ANALYSIS.

Traffic analysis is the technique of obtaining intelligence from study of communications traffic without recourse to cryptanalysis. It includes statistical study of message headings, receipts, acknowledgements, relays, routing instructions, and services; tabulation of the volume, types, and directional flow at each point, noting departure from normality.

TRAFFIC CONTROL, APPROACH AND LANDING SYSTEMS.

Fully automatic terminal and landing systems.

TRAFFIC DIAGRAM.

Chart, illustration, or drawing used to show the movement and control of traffic over a communication system.

TRAFFIC DIRECTOR.

Radar controller proficient in the identification and directing of aircraft in a desired traffic pattern, and proficient in maintaining suitable separation between aircraft and aircraft tracks so as to allow an expeditious flow of air traffic at all times.

TRAIL.

Horizontal distance, at the moment of impact, that a bomb lags behind the aircraft which released it.

TRAIN.

Sequence of pieces of apparatus joined together to forward or complete a call. Series of waves or pulses.

TRAINING AND BATTLE SIMULATION.

Section in a SAGE center where simulated radar returns may be introduced into the system to develop synthetic air situations. It provides a source for monitoring and evaluating operational tests.

TRAJECTORY.

Path taken by a missile or rocket.

TRAX.

Electronic computing device or code-converter which will convert international Morse Code signals into suitable pulses to operate a standard

teleprinter. It will accept signals from a regular radio receiver at any speed from 10-600 words per minute. The device instantly adjusts to different speeds of transmission. If an incorrect character is received the converter will furnish an error signal to the teleprinter.

TRANS (TRANSPORT).

1. Conveyance of cargo or personnel by vehicle or vessel.
2. Vehicle or vessel used to convey personnel or cargo.

TRANSAC.

Transistor computer which performs 600,000 additions a second and consumes only about 6 watts of power. It employs 1,242 transistors. Components are mounted on 20 identical etched wiring boards. Because of the use of direct-coupled transistor circuits, the only other components required are 322 resistors. The computer is packaged in a 5½ inch cube. It can multiply two six-digit figures in 0.000048 seconds. The device will signal when addition, subtraction, multiplication, division, or comparison has been completed, and the output signal is converted into the type of electrical impulse desired.

TRANSADMITTANCE.

Transadmittance from one electrode to another is the quotient of the alternating component of the current of the second electrode by the alternating component of the voltage of the first electrode, all other electrode voltages being maintained constant.

Note. As most precisely used, the term refers to infinitesimal amplitudes.

TRANSCIVER.

Combination of radio transmitting and receiving equipment in a common housing, usually for portable or mobile use, and employing common circuit components for both transmitting and receiving.

TRANSCIVER DATA LINK.

Integrated data processing by means of punched cards using transceivers as terminal equipment; the transmission path can be wire or radio.

TRANSCONDUCTANCE.

1. Amplification factor of a vacuum tube divided by the alternating-current plate resistance. More generally, it is the inphase component of the alternating current of one electrode divided by the alternating voltage of another electrode, all other electrode voltages being maintained constant. The control grid-plate transconductance is ordinarily the most important, and is commonly understood to be intended when either of these terms is used.

2. Change in plate current of a vacuum tube which takes place with a small change in grid voltage. A measure of the amplifying power of the tube.

TRANSCRIBE.

1. Record a radio program by means of electrical transcription for future rebroadcasting.

2. Equipment associated with a computing machine for the purpose of transferring input (or output) data from a record of information in a given language to the medium and the language used by a digital computing machine (or from a computing machine to a record of information).

TRANSCRIPTION.

Electrical recording, such as a high-fidelity, 33-1/3 revolution-per-minute record, containing part or all of a radio program. It may be either an instantaneous recording disk or a pressing.

TRANSDUCER.

Device by means of which energy can flow from one or more transmission systems to one or more other transmission systems.

Note. 1. Energy transmitted by these systems may be of any form (for example, it may be electrical, mechanical, or acoustical), and it may be of the same form or different forms in the various input and output systems.

2. Microphone or loudspeaker which converts mechanical vibrations or sound waves into electrical energy, and vice versa, are examples of a transducer.

ACTIVE. 1. Transducer whose output is dependent upon sources of power which are controlled by one or more of the waves concerned.

2. Transducer containing one or more sources of power.

ALL-PASS. Transducer, of which the attenuation constant is practically zero for all frequencies from zero to infinity.

CONVERSION. Transducer in which the signal undergoes frequency conversion. The gain or loss of a conversion transducer is specified in terms of the useful signal.

DISSYMMETRICAL. Transducer whose input and output image impedances are not equal.

ELECTROACOUSTIC. Transducer for receiving waves from an electric system and delivering waves to an acoustic system, or vice versa.

ELECTROMECHANICAL. Transducer for receiving waves from an electric system and delivering waves to a mechanical system, or vice versa.

HARMONIC CONVERSION. Conversion transducer in which the useful output frequency is a multiple or a submultiple of the input frequency.

HETERODYNE CONVERSION. Conversion transducer in which the useful output frequency is the sum or difference of the input frequency and an integral multiple of the frequency of another wave.

IDEAL. Ideal transducer, for connecting a specified source to a specified load, is a hypothetical linear passive transducer which dissipates no energy and which, when connected to the specified source and load, presents to each its conjugate impedance. Such a transducer transfers the maximum theoretically possible power from the source to the load.

LINEAR. Transducer for which the pertinent measures of all the waves concerned are linearly related.

MODE. Device for transforming an electromagnetic wave from one mode of propagation to another.

PASSIVE. Transducer whose output is not dependent upon sources of power which are controlled by the waves concerned.

SYMMETRICAL. Transducer whose input and output images are equal.

TRANSDUCER GAIN.

Gain of an amplifying device operating between specified source and load impedances is the ratio of the signal power delivered to the load impedance to the signal power that would be delivered to the load impedance if an ideal transducer were substituted for the amplifying device. This ratio is usually expressed in decibels.

TRANSDUCER LOSS.

Ratio of the available power of a specified source to the power that the transducer delivers to a specified load under specified operating conditions.

TRANSF (TRANSFORMER).

Component composed of two or more coils in close proximity to one another. Alternating current in the primary coil causes a magnetic field to build up and collapse in accordance with the current flow. The varying magnetic field induces a voltage in the secondary coil.

TRANSFER.

1. Transmit, or copy, information from one device to another.
2. Jump.
- 3 Act of transferring.

TRANSFER ADMITTANCE.

Complex ratio of the current at the second pair of terminals of an electrical transducer to the electromotive force applied between the first pair, all pairs of terminals being terminated any specified manner.

TRANSFER BOX.

Box without a distribution panel within which one or more corresponding electric circuits are connected or branched.

TRANSFER CHARACTERISTIC.

Relation, usually shown by a graph, between an electrode voltage and current, other electrode voltages being maintained constant

TRANSFER CHECK.

(Reference: CHECK, TRANSFER.)

TRANSFER CIRCUIT.

Circuit which connects communication centers of two or more separate networks to accomplish the transfer of traffic between these networks.

TRANSFER CONSTANT.

Ratio of the power entering a network that is terminated in its image impedance to the power leaving it.

TRANSFER CONTROL.

Synonym for jump.

TRANSFER FACTOR.

Transfer ratio.

TRANSFER IMPEDANCE.

Impedance between any two pairs of terminals of a network is the ratio of a potential difference applied at one pair of terminals to the resultant current at the other pair of terminals, all terminals being terminated in any specified manner.

TRANSFER LINE.

Line on the water at which the transfer of troops and supplies from landing craft to amphibious vehicles is made. Its location may be arbitrary, or may be dictated by the existence of reefs beyond which landing craft cannot navigate.

TRANSFER RATIO.

From one point to another in a transducer at a specified frequency, the complex ratio of the generalized force or velocity at the second point to the generalized force or velocity applied at the first point.

Note. Generalized force or velocity includes not only mechanical quantities, but also other analogous quantities such as acoustical and electrical. The electrical quantities are usually electromotive force and current.

TRANSFER SWITCH.

Form of air switch arranged so that a conductor connection can be transferred from one circuit to another without interrupting current.

TRANSFORMATION PERIOD.

Time required for the activity of a radioactive substance to decay to half its value.

TRANSFORMER.

Component composed of two or more coils in close proximity to one another. Alternating current in the primary coil causes a magnetic field to build up and collapse in accordance with the current flow. The varying magnetic field induces a voltage in the secondary coil.

AIR-CORE. Transformer (usually rf) having a non-metallic core. Transformers wound on a solid insulating substance are assumed to have an air core.

AUDIO-FREQUENCY. Transformer designed to transfer audio-frequency signals from one circuit to another. Commonly used to match two different impedances and permit maximum power transfer.

BELL. Small iron-core transformer having a primary coil that connects to an ac primary line and a secondary coil that delivers 10 to 20 volts, for operation of a doorbell, buzzer, or chimes.

INTERMEDIATE-FREQUENCY. Transformer which is designed for use in the intermediate-frequency amplifier of a super-heterodyne receiver.

OUTPUT. Transformer which is used to couple the plate circuit of a power tube, or tubes, to a load, such as a loudspeaker.

POWER. Transformer used to change a supply voltage to the various higher and lower values required for vacuum-tube plate, heater, and bias circuits.

PULSE. Transformer of special design which operates over a wide range of frequencies. The frequency range must include the PRF and the desired harmonics.

QUARTER WAVELENGTH. One-quarter wavelength section of transmission line which is used as an impedance-matching transformer.

RADIO FREQUENCY. Transformer designed to transfer radio frequency energy from one circuit to another. It may have either an air or small iron core, depending on the frequencies to be handled.

TUNED. Transformer, the associated elements of which are adjusted as a whole to be resonant at the frequency of the alternating current supplied to the primary, thereby causing the secondary voltage to build up to higher values than would otherwise be obtained.

TRANSFORMER COUPLING.

1. Interconnection between stages of an amplifier which employs a transformer for connecting the plate circuit of one stage to the grid circuit of the following stage.
2. Coupling of circuits by means of a transformer.

TRANSFORMER KIOSK.

Aboveground chamber used for large transformers in power systems.

TRANSFORMER LOSS.

Ratio of the signal power delivered to the load impedance to the power that would be delivered to the specified load impedance if an ideal transformer of the same impedance ratio were substituted. This ratio is usually expressed in decibels.

TRANSFORMER OIL.

High-quality insulating oil in which windings of large power transformers are sometimes immersed to provide high dielectric strength, high insulation resistance, high flash point, freedom from moisture, and freedom from oxidation.

TRANSFORMER VAULT.

Isolated inclosure either above or below ground, with fire-resistant walls, ceiling, and floor for unattended transformers and their auxiliaries.

TRANSFORMING SECTION.

Length of waveguide or transmission line of modified cross section, or with a metallic or dielectric insert used for impedance transformation.

TRANSIENT.

1. Instantaneous surge of voltage or current

which occurs as the result of a change from one steady-state condition to another.

2. Phenomenon which takes place in a system owing to a sudden change in conditions and which persists for a relatively short time after the change has occurred.

3. Distinct line or series of lines perpendicular to the direction of scanning produced in the recorded copy immediately following a sudden change in density.

TRANSIENT OSCILLATION.

Momentary oscillation occurring in a circuit during switching.

TRANSIENT PHENOMENA.

Rapidly changing actions occurring in a circuit during the interval between closing of a switch and settling to steady-state conditions, or any other temporary actions occurring after some change in a circuit or its constants.

TRANSISTOR.

1. Semiconductor device having functions similar to vacuum tubes of three or more elements, but not necessarily having the same electrical characteristics.

2. Electron device utilizing properties of semiconductors such as germanium, as detectors, amplifiers and oscillators of electric currents. (Reference: SEMICONDUCTOR.)

3. Comparatively small device using point or layer contacts on a germanium electrode. A small potential on the control electrode can control a relatively large current on the plate electrode.

TRANSIT TIME.

The time required for an electron to leave the cathode and arrive at the plate in a vacuum tube.

TRANSITION.

Change from one circuit condition to the other; that is, the change from mark to space or from space to mark. (Reference: MARKING PULSE, SPACING PULSE.)

TRANSITION FACTOR.

Ratio of the load current that would be delivered by a particular generator to a particular load

without matching to the load current obtained when generator and load impedances are matched. (Reference: MISMATCHING FACTOR, REFLECTION FACTOR.)

TRANSITION FREQUENCY.

Frequency at which a changeover occurs from constant-amplitude recording (at higher audio frequencies) to constant velocity recording (at lower audio frequencies).

TRANSITION LOSS.

Loss, in a transmission system, which would be eliminated by the insertion of an ideal transducer at that point. This ratio is usually expressed in decibels.

TRANSITION POINT.

Point at which the constants of a circuit change in such a way as to cause reflection of a wave being propagated along the circuit.

TRANSITRON.

Thermionic tube circuit whose action depends on the negative transconductance of the suppressor grid of a pentode with respect to the screen grid.

TRANSITRON OSCILLATOR.

Negative-transconductance oscillator employing a screen-grid tube with negative transconductance produced by a retarding field between the negative screen grid and the control grid which serves as the anode.

TRANSLATION LOSS.

Loss in high-frequency reproduction which occurs as the groove velocity decreases.

TRANSLATOR.

1. Device capable of converting information in one form to another form.

2. In telegraph practice, a device capable of converting code signals from one form to another form.

3. In telephone switching practice, a device which is capable of converting information relating to a particular call to a new form required to perform the desired subsequent operation.

4. Devices used in cross-bar systems which change information coded by one system to

equivalent information coded by another system. It may convert a multifrequency dialing code to a cross-bar marker code, a three-digit area code to a special local code, or an equipment number to a telephone number.

5. Network or system in electronic computers having a number of inputs and outputs and so connected that signals representing information expressed in a certain code, when applied to the inputs, cause output signals to appear which are a representation of the input information in a different code. (Reference: MATRIX.)

TRANSLUCENT.

Partly transparent, permitting some passage of light, yet not providing clear visibility.

TRANSMISSION.

1. Transfer of electric power from one location to another over conductors.

2. Dispatching of a signal, message, or other form of intelligence by means of wire or radio-telegraphy, telephony, or facsimile.

BEAM. Radio transmission over a direct sight line in the same manner as light.

COLOR. Transmission of a signal wave which represents both the brightness values and the chromaticity values in the picture of television.

CONSTANT LUMINANCE. Method of color transmission in which the carrier color signal controls the chromaticity of the produced image without affecting the luminance, the luminance being controlled by the monochrome signal in television.

DOUBLE SIDEBAND. Method of communication in which all the frequencies produced by the process of modulation are symmetrically spaced both above and below the carrier frequency, and are transmitted.

FACSIMILE. Transmission of signals produced by the scanning of fixed graphic material, including pictures, for reproduction in record form.

FREQUENCY SHIFT. System of automatic code

transmission and reception that shifts the carrier frequency back and forth between two distinct frequencies to designate mark and space, instead of keying the carrier on and off.

IMPULSE. Form of signaling used principally to reduce the effects of low-frequency interference, which employs impulses of either or both polarities for transmission to indicate the occurrence of transitions in the signals. The impulses are generally formed by suppressing the low-frequency components, including direct current, of the signals.

INVERSE-NEUTRAL-TELEGRAPH. Form of transmission employing zero current during marking intervals and current during spacing intervals.

MONOCHROME. Transmission of a signal wave which represents the brightness values in the picture, but not the chromaticity values in television.

PICTURE. Electric transmission of a picture having a gradation of shade values.

RADIO. Transmission of electrical energy through space.

SINGLE SIDEBAND. Method of communication in which the frequencies produced by the process of modulation on one side of the carrier are transmitted and those on the other side are suppressed. The carrier frequency may be either transmitted or suppressed.

SUPPRESSED-CARRIER. Method of communication in which the carrier frequency is suppressed either partially or to the maximum degree possible. One or both of the sidebands may be transmitted.

VERTICAL-INCIDENT. Transmission of a radio wave vertically to the ionosphere and back. Vertically-incident measurements generally are made to determine the characteristics of the ionosphere. These are converted into oblique-incidence values by the use of transmission curves.

VESTIGIAL SIDEBAND. Method of communication in which frequencies of one sideband,

the carrier, and only a portion of the other sideband are transmitted.

TRANSMISSION AUTHENTICATION.

Security measure embodying self-authentication, message authentication, and station or network authentication, whereby a station may establish the authenticity of its own transmissions.

TRANSMISSION CURVE.

Relationship between the secant of an angle of incidence at the ionosphere and the virtual layer height.

TRANSMISSION GAIN.

General term used to denote an increase in power in transmission from one point to another. Transmission gain is usually expressed in decibels.

TRANSMISSION LEVEL.

Transmission level of the signal power at any point in a transmission system is the ratio of the power of that point to the power at some point in the system chosen as a reference point. This ratio is usually expressed in decibels. The transmission level at the transmitting switchboard is frequently taken as the zero level reference point.

TRANSMISSION LINE.

1. Material structure forming a continuous path from one place to another, for directing the transmission of electromagnetic energy along this path.
2. Conductor or series of conductors used to carry electrical energy from a source to a load.

TRANSMISSION MODE.

Form of propagation along a transmission line characterized by the presence of any one of the elemental types of TE, TM or TEM waves. Note. Waveguide transmission modes are designated by integers (modal numbers) associated with the orthogonal functions used to describe the waveform. These integers are known as waveguide mode subscripts. They may be assigned from observations of the transverse field components of the wave and without reference to mathematics.

TRANSMISSION PLANE.

Plane of vibration of polarized light that will pass through a Nicol prism or other polarizer.

TRANSMISSION PRIMARIES.

L, Q and Y signals which may be combined to produce picture, chrominance and luminance. A color television term.

TRANSMISSION REGULATOR.

In electrical communication, a transmission regulator is a device which functions to maintain substantially constant transmission over a transmission system.

TRANSMISSION SECTION.

One of two or more portions of a long message, each of which is transmitted separately. All transmission sections of the same complete message use the same date-time-group.

TRANSMISSION SECURITY.

Component of communication security which results from all measures designed to protect transmissions from interception and traffic analysis.

TRANSMISSION SPEED.

Number of square inches of copy transmitted per minute.

TRANSMISSION LOSS.

General term used to denote a decrease in signal power in transmission from one point to another. Transmission loss is usually expressed in decibels.

TRANSMISSION MEASURING SET.

Instrument furnished and designed to accurately measure the amount of distortion.

TRANSMISSION SYSTEM.

Assembly of elements capable of functioning together to transmit signal waves.

TRANSMISSION TIME.

Absolute time interval from transmission to reception of a signal.

TRANSMISSION UNIT.

Measure of the gain or loss in either power, voltage, or current of an electrical system, the measure being based on the ratio of the power, voltage, or current at one point to the power, voltage, or current at another point in the system.

TRANSMIT-RECEIVE SWITCH.

Automatic device employed in a radar set for substantially preventing the transmitted energy from reaching the receiver, but allowing the received energy to reach the receiver without appreciable loss.

TRANSMITTED WAVE.

Wave that travels in the second medium which is caused by a wave in the first medium incident to the surface separating the media. A radio wave, traveling through a medium in which the refractive index continually is changing, is caused to follow a curved path in the medium, such as a radio wave follows in the ionosphere. (Reference: REFRACTED WAVE.)

TRANSMITTED-CARRIER OPERATIONS.

Form of carrier transmission in which the carrier wave is transmitted.

TRANSMITTER.

1. The apparatus for the production and modulation of radio-frequency energy for the purpose of radio communication.
2. A term applied to that part of a radio or radar set where the radio frequency oscillations are generated and/or amplified.
3. Device for converting sound waves to electrical waves.

ALTERNATOR. Radio transmitter which utilizes power generated by a radio-frequency alternator.

AMPLITUDE-MODULATOR. Radio transmitter sending out a constant frequency signal varying in amplitude.

ARC. Radio transmitter employing an electrical arc in the generation of RF oscillations.

AURAL. Radio equipment, in television, for transmission of aural signals.

AUXILIARY. Transmitter maintained only for transmitting the regular programs of a station in case of failure of the main transmitter.

CRYSTAL-CONTROLLED. Radio transmitter whose carrier frequency is directly controlled by a crystal oscillator.

FIXED. Transmitter that is operated in a fixed or permanent location.

FIXED-FREQUENCY. Transmitter designed for operation on a single carrier frequency.

LAND. Fixed radio transmitter in a mobile or ship-to-shore radio system.

MOBILE. Transmitter designed for installation in a vessel, vehicle or aircraft and normally operated while in motion.

MULTICHANNEL. Transmitter having two or more complete radio frequency portions capable of operating on different frequencies either individually or simultaneously.

MULTIFREQUENCY. Transmitter capable of operating on two or more selectable frequencies, one at a time, using pre-set adjustments of a single radio-frequency portion.

PORTABLE. Transmitter which can be carried on a person and may or may not be operated while in motion.

PULSE. Transmitter whose output envelope is in the form of pulses.

RADIO. Assembly of equipment which is necessary for the production and modulation of radio frequency signals. The term is sometimes restricted to the part of the apparatus that converts dc or low-frequency ac into modulated RF current.

SPARK. Radio transmitter which utilizes the oscillatory discharge of a condenser through an inductor and a spark gap as the source of its radio-frequency power.

TAPE. Device for sending, at a rapid uniform rate, teletypewriter code which has been punched on a tape with a perforator or a reperforator.

TELEGRAPH. Device for controlling a source of electrical power so as to form telegraph signals.

TELEPHONE. Electroacoustic transducer actuated by sound waves and supplying electrical waves of similar characteristics for transmission over a circuit.

TELEVISION. Radio-frequency and modulating equipment for transmitting modulated radio-frequency power representing a complete television signal (including audio, video, and synchronizing signals).

TRANSPORTABLE. Transmitter designed to be readily carried or transported from place to place, but which is not normally operated while in motion.

VISUAL. Radio equipment for the transmission of the visual signals only.

TRANSMITTER BLOCKER.

Device used to prevent received energy passing from the antenna to the transmitter.

TRANSMITTER DISTRIBUTOR.

Motor-driven device which translates teletype code combinations from fully perforated, or chadless, paper tape into electrical impulses, and transmits these impulses to one or more receiving stations.

TRANSMITTER PULSE.

Radio frequency pulse generated in the transmitter. Sometimes called direct pulse, initial pulse, radar pulse, or main bang.

TRANSMITTING ANTENNA.

Device for converting electrical energy to electromagnetic radiation capable of propagating through space.

TRANSMITTING EQUIPMENT.

Equipment, amplifier, filter, oscillator, etc., associated with production or generation of outgoing signals.

TRANSMITTING LOOP LOSS.

Total losses in a loop due to equipment in a circuit at the transmitting end.

TRANSMITTING STATION.

Location at which the transmitter, transmitting antenna, and associated transmitting equipment of a radio system are grouped.

TRANSMUTATION.

Changing one chemical element into another.

TRANSPONDER.

1. Radio transmitter-receiver which transmits signals automatically when the proper interrogation is received.

2. IFF unit which receives pulses from a radar set or interrogator, and in response to the received pulses transmits a pulse, or sequence of pulses, to enable the craft or beacon incorporating it to be recognized by the interrogating station.

3. Transmitter-receiver capable of accepting the challenge of an interrogator and automatically transmitting an appropriate reply. The equipment can be utilized for IFF, radar navigation or extending radar range.

4. Transponder is an electronic device in which the output is not proportional to the input.

TRANSPONDER DEAD TIME.

Time for which the transponder receiver is paralyzed after reception of a correct interrogation. Some dead time occurs before the transmitter fires and some dead time occurs after transmission.

TRANSFORMER EFFICIENCY.

Ratio expressed as a percentage of the number of replies to the number of interrogations from a transponder.

TRANSPONDER SUPPRESSED TIME RELAY.

Overall fixed time delay between reception of an interrogation and transmission of a reply to this interrogation.

TRANSPORTABLE TRANSMITTER.

Transmitter designed to be readily carried or transported from place to place, but which is not normally operated while in motion.

TRANSPOSITION.

Interchanging the position of open wire conductors to reduce noise and interference.

TRANSPORTION BLOCKS.

Spreaders used to space and reverse at fixed intervals the relative position of two conductors.

TRANSPOSITION, DOUBLE.

(Reference: DOUBLE TRANSPOSITION.)

TRANSPOSITION ERROR.

Error arising from the exchange of position of textual elements without a change in their identities, as in cryptography.

TRANSPOSITION SECTION.

Length of open-wire line to which a fundamental transposition design or pattern is applied as a unit.

TRANSPOSITION SYSTEM.

System in which the plain text symbols are retained, but are rearranged to form a cryptogram.

TRANSRECTIFICATION.

Rectification that occurs in one circuit when an alternating voltage is applied to another circuit.

TRANSRECTIFICATION CHARACTERISTIC.

Graph obtained by plotting the direct voltage values for one electrode of a vacuum tube as abscissas against the average current values in the circuit of that electrode as ordinates, for various values of alternating voltage applied to another electrode as a parameter. The alternating voltage is held constant for each curve and the voltages on other electrodes are maintained constant.

TRANSRECTIFICATION FACTOR.

Quotient of the change in average current of an electrode, by the change in the amplitude of the alternating sinusoidal voltage applied to another electrode, the direct voltages of this and other electrodes being maintained constant. As most precisely used, the term refers to infinitesimal changes.

TRANSRECTIFIER.

Device, ordinarily a vacuum tube, in which rectification occurs in one electrode circuit when an alternating voltage is applied to another electrode.

TRANSVERSE CROSS TALK COUPLING.

Between a disturbing and a disturbed circuit in any given section, the vector summation of the direct couplings between adjacent short lengths of the two circuits, without dependence on intermediate flow in other nearby circuits.

TRANSVERSE ELECTRIC WAVE.

In a homogeneous isotropic medium, an electromagnetic wave in which the electric field vector

is everywhere perpendicular to the direction of propagation.

TRANSVERSE ELECTROMAGNETIC WAVE.

In a homogeneous isotropic medium, an electromagnetic wave in which both the electric and magnetic field vectors are everywhere perpendicular to the direction of propagation.

TRANSVERSE MAGNETIC WAVE.

In a homogeneous isotropic medium, an electromagnetic wave in which the magnetic field vector is everywhere perpendicular to the direction of propagation.

TRANSVERSE WAVE.

Wave in which the direction of displacement at each point of the medium is perpendicular to the direction of propagation. When the displacement makes an acute angle with the direction of propagation, the wave is considered to have both longitudinal and transverse components.

TRANSVERSE WAVE, MAGNETIC.

In a homogeneous isotropic medium an electromagnetic wave in which the magnetic field vector is everywhere perpendicular to the direction of propagation.

TRAP.

In a burglar alarm system, an automatic device applied to a door or window frame for the purpose of producing an alarm condition in the protective circuit whenever a door or window is opened.

TRAPEZOIDAL GENERATOR.

Vacuum-tube stage designed to produce a trapezoidal voltage wave.

TRAPEZOIDAL WAVE.

1. Waveform of trapezoidal shape.
2. Square wave on which a sawtooth is superimposed. It is the voltage wave necessary to give a linear deflection current through the coils of a magnetic cathode-ray tube.

TRAPPING.

Type of radio wave propagation in which radiated rays are bent excessively by refraction in

the lower layers of the atmosphere. This bending creates an effect much as if a duct or waveguide had been formed in the atmosphere. The duct, which may be either elevated or ground based, is able to guide part of the radiated energy over distances far beyond the normal radar range. (Reference: GUIDED PROPAGATION.)

TRAUTONIUM.

Electronic musical instrument in which audio-frequency currents are generated in an oscillator circuit employing a neon tube controlled by a variable resistance.

TRAVELING DETECTOR.

Probe mounted on a slider and free to move along a longitudinal slot cut in a waveguide or coaxial transmission line. The traveling detector is connected to auxiliary measuring apparatus and forms a means of examining the relative magnitude of any standing wave system.

TRAVELING PLANE WAVE.

Plane wave, each of whose frequency components has an exponential variation of amplitude and a linear variation of phase in the direction of propagation.

TRAVELING WAVE.

The resulting wave when the electric variation in a circuit takes the form of translation of energy along a conductor, such energy being always equally divided between current and potential forms without translation of energy.

TRAVELING-WAVE TUBE.

Electron tube in which a beam of electrons interacts continuously with a guided electromagnetic wave to produce amplification at microwave frequencies.

TRDTO.

Classified definition. (Reference: AFM 100-50.)

TREE ATTACHMENTS.

Parts of a telephone plant fastened to a tree.

TREE GUARD.

Two pieces of insulating material placed on strand or cable to prevent rubbing on trees.

TRF (TUNED RADIO-FREQUENCY).

1. Synchronized radio-frequency as applied to electrical equipment such as amplifiers, receivers, transformers, and the like for a specific purpose or application.
2. Forced frequency that cannot be varied in application.

TRFWP (TRI-REGIONAL FREQUENCY WORKING PARTY).**TRIAD.**

Term used to indicate three radio stations operating as a group for determination of position of aircraft or ships.

TRI-TET OSCILLATOR.

Crystal-controlled, vacuum-tube oscillator circuit which is isolated from the output circuit through use of the screen grid electrode as the oscillator anode. Used for multiband operation because it generates strong harmonics of the crystal frequency.

TRIANGULATE.

Method of measuring one wire or circuit by taking three loops and solving by simultaneous equation.

TRIANGULATION.

Determination of the position of a ship or aircraft by obtaining bearings of the moving object with reference to two fixed radio stations a known distance apart. This gives the values of one side and all angles of a triangle, from which the position can be computed.

TRIBOELECTRIC.

Pertaining to electrification generated by friction. A triboelectric series is a list of substances so arranged that any of them may become positively electrified when rubbed with one farther down the list.

TRIBUTARY STATION.

Station electrically connected to a tape relay network, but normally having no tape relay responsibilities.

TRICKLE CHARGE.

Trickle charge of a storage battery is a continuous charge at a low rate approximately equal

to the internal losses and suitable to maintain the battery in a fully charged condition. This term is also applied to very low rates of charge suitable not only for compensating for internal losses, but to restore intermittent discharges of small amounts delivered from time to time to the load circuit.

TRICKLE CHARGER.

Device designed to charge a storage battery at a low rate continuously or during a major portion of the 24-hour day.

TRICLINIC.

Having three unequal axes intersecting at angles, not more than two of which are equal, and not more than one of which is 90° .

TRICON.

Radio navigation system in which the airborne receiver accepts pulses from a TRIAD, or chain of three stations, pulsed in variable time sequence. The time sequences vary so that the pulses arrive at the same time on paths of various lengths.

TRIGGATRON.

High-pressure, triggered, spark-gap modulator.

TRIGGER.

1. To start action in another circuit which then functions for a period of time under its own control.
2. Short pulse, either positive or negative, which can be used to set into motion a chain of events.

TRIGGER ACTION.

Initiation of main current flow instantaneously by a weak controlling impulse in a device.

TRIGGER CIRCUIT.

1. Circuit in which an electron tube performs the function of a relay. Impulses applied to the input of the tube produce corresponding impulses in the output circuit which start a chain of events. Used in time-interval counters, radio beacons, and other timing circuits.
2. Circuit which has two conditions of stability, with means for passing from one to the other when certain conditions are satisfied, either

spontaneously, or through application of an external stimulus.

TRIGGERED SPARK-GAP.

Fixed spark gap in which the discharge passes between two electrodes and is struck (started) by an auxiliary electrode, the trigger, to which low-power pulses are applied.

TRIGGERING.

Starting an action in another circuit, which then functions for a time under its own control.

TRIGGERING CIRCUIT.

(Reference: FIRING CIRCUIT.)

TRIGGERING LEVEL.

Sensitivity level of the transponder receiver at which the signal will just cause the transmitter to fire.

TRIMMER CAPACITOR.

Variable capacitor associated with another capacitor and used for fine adjustment of the total capacitance.

TRIMMING, TREE.

Work of securing clearance for telephone lines by cutting back trees and brush to secure a free path.

TRIODE.

Three-electrode vacuum tube containing an anode, a cathode, and a control electrode.

TRIODE-PENTODE.

Vacuum tube having a triode and a pentode in the same envelope.

TRIP COIL.

Electromagnet having a moving armature arranged to trip a circuit breaker or other protective device and thereby open a circuit under abnormal conditions.

TRIP MAGNET.

Magnetically operated latch used to phase a facsimile transmitter or recorder. (Reference: PHASE MAGNET).

TRIPLE DETECTION.

Method for reception in which two frequency converters are employed before final detection.

TRIPLET.

Three radio facilities operated as a group for the determination of positions.

TRIPLEX CABLE.

Cable composed of three insulated single-conductor cables twisted together.

Note. They may or may not have a common insulating covering.

TRIPLEX SYSTEM.

Telegraph system in which two messages in one direction and one message in the other direction can be sent simultaneously over a single circuit.

TRIPPING DEVICE.

Mechanical or electromagnetic device used to bring a circuit breaker or starter to its off or open position, either when certain abnormal electrical conditions occur, or when a catch is actuated manually.

TRITIUM.

Hydrogen isotope having an atomic weight or mass of three. It is one type of heavy hydrogen.

TRK (TRUCK).

Motor vehicle, usually loaded from the rear and designed to haul goods as transport personnel.

TROMBONE.

U-shaped, adjustable, coaxial line matching assembly.

TROPICALIZATION.

Science developed to combat the fungi that ruins military equipment in steaming jungle regions.

TROPISM.

Directional property of a substance, especially a crystal, dependent upon the vector quantities which determine the states of the constituent atoms or molecules.

TROPO.

Tropospheric. (Reference: FPTS (FORWARD PROPAGATION BY TROPOSPHERIC SCATTER).)

TROPOSPHERE.

Part of the earth's atmosphere in which temperature generally decreases with altitude, clouds form, and convection is active. Experiments indicate that the troposphere occupies the space a-

bove the earth's surface up to a height ranging from about six kilometers at the poles to about 18 kilometers at the equator.

TROPOSPHERIC SUPERREFRACTION.

Phenomenon occurring in the troposphere whereby radio waves are bent sufficiently to be returned to the earth.

TROPOSPHERIC WAVE.

Radio wave that is propagated by reflection from a place of abrupt change in the dielectric constant or its gradient in the troposphere.

Note. In some cases, the ground wave may be so altered that new components appear to arise from reflections in regions of rapidly changing dielectric constants: when those components are distinguishable from the other components are distinguishable from the other components, they are called tropospheric waves.

TROUBLE.

Failure of a circuit or circuit element to perform in a standard manner.

TICKET. In testboard work, a small form for reporting any circuit condition that requires a testboardman's attention.

UNIT. Weighting figure applied to circuits or circuit to indicate their expected performance in a given period of time.

TROUBLE HISTORY CARD.

Card for recording the performance of a circuit or service.

TRP (TROOP).

1. Body of soldiers.
2. Enlisted members of a military force as distinguished from officers or commander.
3. Generally applied to army personnel.

TRT (TRACKING TECHNICIAN).

Noncommissioned officer who assists the tracking officer in a SAGE system.

TRU-TRIP.

Trade name for a transistorized, high-speed tone system used to actuate a protective relay in power systems at a distance from the tone source.

TRUE BEARING.

Bearing given in relation to true geographic north.

TRUE COURSE.

Course in which the direction of the reference line is true north.

TRUE FIELD OF VIEW.

1. Actual angle of view of the instrument.
2. Maximum angle subtended by any two objects which can be viewed simultaneously.

TRUE NORTH.

Geographic north; the direction of the geographic north pole from a point on the earth's surface.

TRUE OHM.

Actual value of the practical unit of resistance. It is equal to 10^9 absolute electromagnetic units of resistance.

TRUE POWER.

Average value of power consumed by a circuit during one complete cycle of alternating current. (Reference: ACTIVE OR ACTUAL POWER.)

TRUNCATED PARABOLOID.

Paraboloid in which a portion of the top and bottom have been cut away in order to broaden the main lobe in the vertical plane.

TRUNK.

1. Single message circuit between two points, both of which are switching centers and/or individual message distribution points.
2. Communications channel between two different offices or between groups of equipment within the same office.

INTEROFFICE. Direct telephone trunk between two local central offices.

PBX (PRIVATE BRANCH EXCHANGE). Subscriber line used as a trunk between a PBX and the central office which serves it.

TANDEM. Trunk extending from a central office or a tandem office to a tandem office and used as part of a telephone connection between stations.

TIE. Telephone line or channel directly connecting two private branch exchanges.

TRUNK CIRCUIT.

Circuit composed of relays, repeating coils, condensers, resistors, etc., which allows circuits to operate between switchboards, dial or manual, both private and central office. Sometimes called repeaters. Briefly, a circuit directly connecting two distant exchanges.

TRUNK EXCHANGE.

Exchange primarily devoted to handling trunk calls.

TRUNK GROUP.

Consists of those trunks between two points, both of which are switching centers and/or individual message distribution points, and which employ the same multiplex terminal equipments.

TRUNK HUNTING.

Operation of a selector or other similar device, to establish connection with an idle circuit of a chosen group. This is usually accomplished by successively testing terminals associated with this group until a terminal is found which has an electrical condition indicating it to be idle.

TRUNK LINE CONDUIT.

Duct bank provided for main or trunk line cables.

TRUNNION.

Cylindrical support for a bearing, used in crystal phonograph pickups.

TRUST (TRIESTE UNITED STATES TROOPS).

TS (TRACKING SUPERVISOR).

In a SAGE center, a noncommissioned officer in the Direction Center Air Surveillance Branch of a SAGE center who supervises the Track Monitors.

TT (TEXAS TOWER).

Radar installation on an offshore platform.

TTE (TENTATIVE TABLE OF EQUIPMENT).

Table or list prescribing equipment required to maintain newly developed or modified aircraft or missiles until provided for by an appropriate master equipment allowance list, equipment component list, or table of allowance.

TYNCC (TULSA TRANSCEIVER NETWORK CONTROL CENTER).

Centrally located relay station assigned the functional responsibility of a Net Control Center in the AMC LOGCOM network. The center is located at 1226 East Second Street, Tulsa, Oklahoma.

TU (TASK UNIT).

Military unit organized to accomplish a specific task or mission. This is a temporary unit.

TUBA.

Land-base radar countermeasure device. Tremendously powerful jamming transmitter developed for use against German night fighters. A vacuum tube known as the resnatron is used in the mechanism.

TUBE.

1. Vacuum tube, so named because of its oftentimes tube-shaped glass or metal envelope.
2. Hollow cylindrical piece of porcelain, usually unglazed, having a head or shoulder at one end. It is inserted in a hole drilled through a wall, floor, ceiling, joist, stud, etc., and electric wires are run through the tube.

BALLAST. Current-controlling resistance device designed to maintain substantially constant current over a specified range of variation in the applied voltage or the resistance of a series circuit.

BEAM POWER. Tetrode or pentode in which the electron stream is directed to flow in concentrated beams from the cathode to the plate.

CATHODE-RAY. Funnel-shaped vacuum tube in which the instantaneous position of a sharply focused electron beam, deflected by means of electrostatic and/or electromagnetic fields, is indicated by the spot of light produced by the impact of the electrons on a fluorescent screen at the large end of the tube.

CONVERTER. Multiement vacuum tube used both as a mixer and an oscillator in a superheterodyne receiver. It creates a local frequency and combines it with an incoming signal to produce an intermediate frequency.

DARK TRACE. Cathode-ray tube with a screen composed of a halide of sodium or potassium. The screen normally is nearly white, and wherever the electron beam strikes, it turns magenta color which is of long persistence. The screen can be illuminated by a strong light source so that the reflected image may be made intense enough to be projected.

DOORKNOB. Doorknob-shaped vacuum tube designed for UHF transmitter circuits, having low electron-transit time and low interelectrode capacitance, because of the close spacing and small size, respectively, of electrodes.

ELECTRON. Highly evacuated or gas-filled vacuum tube in which electrons are emitted and controlled.

GAS. Electron tube which is filled with gas at low pressure in order to obtain certain desirable characteristics.

HARD. High-vacuum, electronic tube.

HIGH-VACUUM. Electron tube evacuated to such a degree that its electrical characteristics are essentially unaffected by gaseous ionization.

McNALLY. Reflex klystron tube, the frequency of which may be controlled over a wide range; used as a local oscillator.

MULTIELECTRODE. Vacuum tube containing more than three electrodes associated with a single electron stream.

MULTIUNIT. Vacuum tube containing within one envelope two or more groups of electrodes, each associated with separate electron streams.

REMOTE-CUTOFF. Vacuum tube which is designed so as to approach cutoff very gradually as the negative grid potential is increased; used in the radio frequency stages of receivers employing automatic volume control.

SINGLE-ENDED. Vacuum tube in which all electrode connections are made to base pins. The letter S after the first numerals in a receiving tube designation indicates a single-ended tube.

SOFT. Vacuum tube which has been adversely affected by the presence of gas in the tube; not to be confused with tubes designed to operate with gas inside them.

STORAGE. Cathode-ray tube of special design in which signals can be stored or retained for a short time, after which the signals may be recovered without appreciable loss of identity.

TRAVELING-WAVE. Vacuum tube in which a beam of electrons interacts continuously with a guided electromagnetic wave to produce amplification at microwave frequencies.

VACUUM. Device consisting of an evacuated enclosure containing a number of electrodes, between any two or more of which conduction of electricity through the vacuum or contained gas may take place.

VARIABLE-MU. Vacuum tube, the control-grid wires of which are irregularly spaced, so that at different points within its operating range the grid exercises a different amount of control on the electron stream. This shifts the operating point from one section of its characteristic curve to another, thus changing the amplification factor (H).

TUBE COEFFICIENT.

Constants that describe the characteristics of a thermionic vacuum tube, such as amplification factor, mutual conductance, alternating-current plate resistance.

TUBE ELECTROMETER.

Thermionic vacuum tube adapted for use as an electrometer for measuring potential difference.

TUBE HEATING TIME.

Time required for the coolest portion of a mercury vapor tube to attain operating temperature.

TUBE NOISE.

Noise originating in a vacuum tube, such as that due to shot effect and thermal agitation.

TUBE OF MAGNETIC INDUCTION.

Magnetic circuit tubular form having the same magnetic flux through all cross sections.

TUBE TESTER.

Test instrument designed to indicate the condition of vacuum tubes used in electronic equipment.

TUBE VOLTAGE DROP.

Tube voltage drop in a gas tube is the anode voltage during the conducting period.

TUBE VOLTMETER.

Voltage-measuring instrument utilizing the characteristics of a vacuum tube for measuring voltages with minimum effect on the circuit to which the instrument is connected.

TUBULAR CAPACITOR.

Paper or electrolytic capacitor having the form of a cylinder, with leads usually projecting axially from the ends. The capacitor plates are long strips of metal foil separated by insulating strips, all rolled together into a compact tubular shape.

TUNABLE ECHO BOX.

Echo box consisting of an adjustable cavity operating in a single mode. If calibrated, the setting of the plunger at resonance will indicate the wave length.

TUNABLE MAGNETRON.

Term used to describe the capability of tuning the radar's magnetron over a limited band of frequencies.

TUNED.

Adjusted to resonate or operate at a specified frequency.

TUNED ANTENNA.

Antenna designed to provide resonance at the desired operating frequency by means of its own inductance and capacitance.

TUNED CIRCUIT.

Circuit consisting of inductance and capacitance which can be adjusted for resonance at a desired frequency.

TUNED FEEDERS.

Resonant feeder system; the length is critical.

TUNED FILTER.

Resonant circuit connected between two circuits to prevent the passage of signals of its own resonant frequency.

TUNED FILTER OSCILLATOR.

Vacuum-tube oscillator employing a tuned filter.

TUNED RADIO-FREQUENCY AMPLIFIER.

Tuned amplifier, using resonant-circuit coupling, designed to operate at radio frequencies.

TUNED RADIO-FREQUENCY TRANSFORMER.

Transformer used for selective coupling in radio frequency stages.

TUNED RADIO-FREQUENCY RECEIVER.

Radio receiver consisting of a number of vacuum-tube amplifier stage that are tuned to resonance at the carrier frequency of the desired signal by a gang variable tuning capacitor. The amplified signals at the original carrier frequency are fed directly into the detector for demodulation, and the resulting audio-frequency signals are amplified by an audio-frequency amplifier and reproduced by a loudspeaker.

TUNED REED FREQUENCY METER.

Vibrating-reed instrument for measuring the frequency of an alternating current.

TUNED RELAY

Relay having mechanical or other resonating arrangements that limit response to currents at one particular frequency.

TUNED RESONATING CAVITY.

Resonating cavity half a wave length long or some multiple of a half wave length, used in connection with a waveguide to produce a resultant wave with the amplitude in the cavity greatly exceeding that of the wave in the guide. For reception of waves, a detecting grating can be placed at the point of maximum amplitude in the cavity, to convert the energy to a form suitable for amplification in a telephone or television circuit. A tuned cavity is a non-reflecting termination for a guide.

TUNED ROPE.

Long lengths of chaff made up of a series of tuned elements.

TUNED TRANSFORMER.

Associated transformer circuit elements of which are adjusted as a whole to be resonant at the frequency of the alternating current supplied to the primary, thereby causing the secondary voltage to build up to higher values than would otherwise be obtained.

TUNED-GRID OSCILLATOR.

Oscillator, the frequency of which is determined by a parallel-resonant circuit in the grid circuit coupled to the plate to provide the required feedback.

TUNED-GRID, TUNED-PLATE OSCILLATOR.

Oscillator having parallel-resonant circuits in both plate and grid circuits, the necessary feedback being obtained by the plate-to-grid interelectrode capacitance.

TUNED-PLATE OSCILLATOR.

Oscillator whose frequency is determined by a parallel-resonant

TUNED-PLATE/TUNED-GRID OSCILLATOR.

Vacuum-tube oscillator which has resonant circuits in both its grid and plate circuits, with no inductive coupling between them.

1. Unit containing only the radio-frequency amplifier and detector stages of a receiver, used chiefly for feeding radio programs into the audio-frequency amplifier of a public-address or other sound system.

2. Portion of a receiver which contains the circuits that are tuned to resonance at the received signal frequency.

3. Device for adjusting a resonant circuit to a particular frequency.

TUNGAR RECTIFIER.

Vacuum-tube rectifier circuit employing a Tungar tube.

TUNGAR TUBE.

Phanatron (hot-cathode, gas-discharge, rectifier

tube) having a heated filament serving as cathode and a graphite disk serving as anode in an argon-filled bulb at a low pressure. Used chiefly in battery chargers.

TUNGSTEN.

Metal used in the manufacture of filaments for vacuum tubes and in making contact points for switches and other parts where sparking may occur. After the tungsten is made ductile by rolling, swaging, and hammering, it becomes very tough and also very strong.

TUNGSTEN FILAMENT.

Filament used in incandescent lamps and in thermionic vacuum tubes and other tubes requiring an incandescent cathode. It is generally made by drawing tungsten metal into wire with dies. The fusing point of the tungsten is about 1700° centigrade. Smaller tungsten filaments are operated in a vacuum, while those for larger lamps are used in an inert gas at about ordinary atmospheric pressure.

TUNING.

Adjustment in relation to frequency of a circuit or system to secure optimum performance; commonly, the adjustment of a circuit or circuits to resonance.

GANGED. Simultaneous tuning of two or more circuits by a single mechanical control.

IN-LINE. Method of tuning the IF strip of a superheterodyne receiver in which all the IF amplifier stages are made resonant to the same frequency. This type of tuning results in a narrow bandwidth.

SLUG. Means of varying the frequency of resonant circuit by introducing a slug of material into either the electric or magnetic fields or both.

STAGGER. Method of aligning the IF stages of a superheterodyne receiver in order to produce wide bandwidth. This is accomplished by peaking intermediate IF transformers at slightly different frequencies.

TUNING CAPACITOR.

Variable capacitor used to adjust the natural frequency of an oscillatory or resonant circuit.

TUNING CIRCUIT.

Circuit containing inductance and capacitance, either or both of which may be adjusted to make the circuit responsive to a particular frequency.

TUNING COIL.

Variable inductance used to adjust the natural frequency of an oscillatory or resonant circuit.

TUNING CONTROL.

Control knob that adjusts all tuned circuits of a receiver simultaneously for reception of a desired sound or television program.

TUNING EYE.

Popular name for a cathode-ray tuning indicator.

TUNING FORK.

Two-pronged hard steel device that vibrates at a definite natural frequency when struck or when set in motion by electromagnetic means. Used in some electronic equipment as an accurately controllable source of signals because its vibrations can be transformed readily into audio-frequency signals by means of pick-up coils.

TUNING IN.

Adjusting the tuning controls of a radio receiver to obtain maximum response to the signals of the station it is desired to receive.

TUNING INDICATOR.

Device that indicates when a radio receiver is tuned accurately to a radio station. It is connected to some circuit in which current or voltage is a maximum or minimum when the receiver is accurately tuned to give maximum output signal strength.

TUNING INDUCTOR.

Variable inductor used for tuning purposes.

TUNING METER.

Ordinary direct-current meter connected to a radio-receiver circuit for use in determining when the receiver is accurately tuned to a station. Now largely replaced by the cathode-ray tuning indicator.

TUNING SCREW.

Impedance-adjusting element in the form of a

rod whose depth of penetration through the wall into a waveguide or cavity is adjustable by rotating the screw.

TUNING STUBS.

Inductor elements, usually adjustable, which are connected to transmission lines at intervals to improve the voltage distribution.

TUNING WAND.

Rod of insulating material having a brass plug at one end and a powdered iron core at the other end. Used for checking receiver alignment.

TUNING-FORK DRIVE.

Control of a vacuum tube oscillator by continuous vibrations of a tuning fork. A high harmonic of the oscillating signal obtained from the fork is selected by filter circuits and strongly amplified to determine the frequency of the main oscillator in a radio transmitter.

TURBIDIMETER.

Instrument for measuring the turbidity of a liquid. A photoelectric turbidimeter does this by measuring the amount of light that passes through the liquid. (Reference: OPACIMETER.)

TURBULENCE.

Violent agitation of the air.

TURN.

One complete loop of wire.

TURNS RATIO OF A TRANSFORMER.

Ratio of the number of turns in the high-voltage winding to that in the low-voltage winding.

Note. In the case of a constant-potential transformer having taps for changing its voltage ratio, the turn ratio is based on the number of turns corresponding to the normal rated voltage of the respective windings, unless otherwise specified.

TURNSTILE ANTENNA.

Antenna composed of two dipole antennas normal to each other with their axes intersecting at their midpoints. Usually the currents are equal and in phase quadrature.

TURNABLE.

Electric or spring motor-driven disk on which the record is placed in an electric phonograph, record player, or sound recorder.

TURRET.

Revolving plate sometimes mounted at the front of a television camera and carrying two or more lenses of different types, used to permit rapid interchange of lenses.

TUSAFG (UNITED STATES AIR FORCE TASK GROUP, AMERICAN MISSION FOR AID TO TURKEY).**TUSAG (UNITED STATES ARMY GROUP, AMERICAN MISSION FOR AID TO TURKEY).****TVOR (TERMINAL VHF OMNI-RANGE).**

VHF OMNI-RANGE, normally low powered, complete with a local monitoring device which will automatically shut down the facility if it is not operating properly. The TERMINAL VHF OMNI-RANGE is intended primarily for installation in terminal area, on or adjacent to an airport, to provide navigational guidance to aircraft during approach and let-down to the airport.

TW (TWISTED).

1. United by winding one strand around another.
2. Wrenched, distorted, or bent.

TWEETER.

Loudspeaker designed to handle only the higher audio frequencies from 3,000 to 15,000 cycles.

TWIN AXIS.

Line perpendicular to both crystalline axes of a twin crystal.

TWIN CABLE.

Cable composed of two insulated stranded conductors laid parallel that have a common covering.

TWIN WIRE.

Cable composed of two small, insulated conductors laid parallel, that have a common covering.

TWIN-TRIODE.

Two triode vacuum tubes in a single envelope.

TWINING.

One of two types of nonphysical defects that occur in quartz crystals, resulting from structural misgrowth of otherwise perfect crystals, yet giving no evidence of their presence in ordinary light. Optical twinning is the presence of both right-hand quartz and left-hand quartz in the same crystal. Electrical twinning is the presence of adjacent regions of quartz having their electrical axes oppositely poled.

TWIST.

Progressive rotation of the cross section of the guide about the longitudinal axis.

TWISTED JOINT.

Union of two conductors wound tightly around each other. A sleeve may be used and this and the conductors twisted.

TWISTED PAIR.

Cable composed of two small insulated connectors, twisted together without a common covering.

Note: The two conductors of a twisted pair are usually substantially insulated, so that the combination is a special case of a cord.

TWISTER.

Piezoelectric crystal that generates a voltage when twisted.

SLEEVE. Tool, like a pair of pliers, arranged to fit sleeves on line wire for twisting the sleeves in making a joint. Used in pairs.

TWO-DIMENSION GAIN REDUCTION.

Classified definition. (Reference: AFM 100-50.)

TWO-FLUID CELL.

Cell having different electrolytes at the electrodes.

TWO-PART CODE.

Randomized code consisting of an encoding section in which the plain text groups are arranged in an alphabetical or other significant order accompanied by their code groups arranged in a nonalphabetical or random order and a decoding station in which the code groups are arranged

in alphabetical or numerical order and are accompanied by their meanings as given in the encoding section.

Note: The equivalent of the HATTED CODE used by United Kingdom services.

TWO-PHASE CURRENT.

Current delivered through two pairs of wires or a phase difference of $1/4$ cycle (90°) between the currents in the two pairs.

TWO-PHASE, THREE-WIRE SYSTEM.

System of alternating-current supply comprising three conductors between one of which (known as the common return) and each of the other two are maintained alternating differences of potential displaced in phase by one quarter of a period with relation to each other.

TWO-PHASE, FOUR-WIRE SYSTEM.

System of alternating-current supply comprising two pairs of conductors between one pair of which is maintained an alternating difference of potential displaced in phase by one quarter of a period from an alternating difference of potential of the same frequency maintained between the other pair.

TWO-PHASE, FIVE-WIRE SYSTEM.

System of alternating-current supply comprising five conductors, four of which are connected as in a four-wire, two-phase system, the fifth being connected to the neutral points of each phase.

Note: The neutral is usually grounded. Although this type of system is usually known as the two-phase, five-wire system, it is strictly a four-phase, five-wire system.

TWO-SOURCE FREQUENCY KEYING.

Keying in which the modulating wave abruptly shifts the output frequency between predetermined values, where the values of output frequency are derived from independent sources, and therefore the output wave is not coherent, and in general will have a phase discontinuity.

TWO-TONE KEYING.

Keying in which the modulating wave causes

the carrier to be modulated with one tone for marking condition and modulated with a different tone for the spacing condition.

TWO-TONE MODULATION.

1. Method of modulation in which two different carrier frequencies are used for the two signaling conditions.
2. Teletypewriter operation, a method of modulation in which two different carrier frequencies are employed for the two signaling conditions. The transition from one frequency to the other is abrupt, with resultant phase discontinuities.

TWO-WATTMETER METHOD.

Method of measuring total power in a balanced or unbalanced three-phase system by adding the readings of two wattmeters. Each has its current coil in one phase and its voltage coil connected between that phase and the third phase.

TWO-WAY COMMUNICATION.

Communication between radio stations each having both transmitting and receiving equipment.

TWO-WAY SWITCH.

Switch used for controlling lights or other electrical equipment from either of two positions.

TWO-WIRE CIRCUIT.

Metallic circuit formed by two conductors insulated from each other.

Note: The term is also used in contrast with four-wire circuit to indicate a circuit using one line or channel for transmission of electric waves in both directions.

TWO-WIRE LINE.

Metallic circuit formed by two conductors (or sets of two or more in parallel) insulated from each other.

TWO-WIRE REPEATER.

Repeater that provides for transmission in both directions over a two-wire circuit. In carrier, this usually operates on the principle of frequency separation for the two directions of transmission.

TWO-WIRE SYSTEM.

System of electric supply comprising two conductors between which the load is connected.

TWO-WIRE TERMINATION.

Audio termination of a channel in a single pair used for both sending and receiving.

TWO WHEELS.

Project for equipping AACS mobile units with light mobile equipment. The name is derived from the fact that the equipment will be mounted on two-wheel trailers. These units will be authorized both light and medium equipment, depending upon the organization and mission of the particular unit. The project for providing the medium equipment is called FOUR WHEELS since the equipment will be mounted on four-wheel vehicles. The light equipment is designed with primary emphasis on a high degree of mobility. Size and weight limits were established so that each facility is capable of being transported on small cargo aircraft without major disassembly. Those units have not been designed for sustained operation and would, in actual practice, be replaced as soon as feasible, with more substantial equipment, normally the medium units.

TWR (AIRDROME CONTROL).**twr (TOWER).**

Short for control tower.

TWT (TRAVELING WAVE TUBE).

Electron tube in which a beam of electrons interacts continuously with a guided electromagnetic wave to produce amplification at microwave frequencies.

TWT (TRAVELING WAVE TUBE) PREAMP.

Relatively new type of UHF amplifier tube utilizing the interaction of EM fields and an electronic beam. As a receiver preamplifier, it is characterized by wide bandwidth and an amplification center frequency which can be electronically scanned over a wide RF band.

TWX.

1. Service furnished the USAF by the American Telephone and Telegraph Company and other telephone companies within the United States.

2. Service which permits teletypewriter communication through communications company switchboards with any other TWX service subscriber on a basis similar to long-distance telephone service.

**TX (PRINCIPAL TELETYPE).
TYING.**

Operation of fastening an open wire to an insulator with a short piece of flexible wire.

TYNDALL EFFECT.

Scattering of light by very small suspended particles. The smaller the particles, the greater is the polarization of the scattered light. Polarization is complete for particle diameters less than 0.1 micron (0.0001 millimeter). Suspension-type light values utilize this effect.

TYPE A DISPLAY.

Range-amplitude display in which the time-base is essentially a straight line.

TYPE A FACSIMILE.

System of facsimile communication in which images are built up of lines of dots of constant intensity.

TYPE A WAVES.

Continuous waves.

TYPE A1 WAVES.

Unmodulated, keyed, continuous waves.

TYPE A2 WAVES.

Modulated, keyed, continuous waves.

TYPE A3 WAVES.

Continuous waves modulates by music, speech, or other sounds.

TYPE A4 WAVES.

Super-audio-frequency modulated continuous waves, as used in facsimile systems.

TYPE A5 WAVES.

Super-audio-frequency modulated continuous waves as used in television.

TYPE B DISPLAY.

Presentation on a radar indicator or display in which the echo appears as a bright spot, with bearing as the horizontal coordinate and range as the vertical coordinate.

TYPE B FACSIMILE.

System of facsimile communication in which images are built up of lines of dots of varying intensity as in telephotography and photoradio.

TYPE B WAVES.

Keyed, dampened waves.

TYPE C DISPLAY.

Type of presentation on a radar indicator in which the signal appears as a bright spot, with bearing as the horizontal coordinate and elevation angle as the vertical coordinate.

TYPE D DISPLAY.

Type of presentation on a radar indicator which combines types B and C displays. The signal appears as a bright spot, with bearing plotted horizontally and elevation plotted vertically. Range is also plotted vertically with elevation.

TYPE E DISPLAY.

Modification of type B display. The signal appears as a bright spot, with range plotted horizontally and elevation plotted vertically.

TYPE EPI (EXPANDED POSITION INDICATOR) DISPLAY.

Displays an expanded sector from PPI presentation. (Reference: DISPLAY.)

TYPE F DISPLAY.

Type of presentation on a cathode-ray indicator in which a single signal appears as a bright spot. Bearing angle is plotted horizontally and elevation angle is plotted vertically.

TYPE G DISPLAY.

Similar to type F display. A single signal appears as a bright spot with wings that grow as distance to the target is diminished. Bearing angle is plotted horizontally and elevation angle is plotted vertically.

TYPE H DISPLAY.

Modification of the type B display. The signal appears as a bright line, the slope of which is proportional to the line of the angle of elevation. Bearing is plotted horizontally and range is plotted vertically.

TYPE I DISPLAY.

Type of presentation on a cathode-ray indicator used to indicate range and direction with a conically scanning antenna. The signal appears as a circular segment with radius proportional to range. Brightest part of the circle indicates direction from axis of cone to the target.

TYPE J DISPLAY.

Modification of the type A display. The sweep provides a circular range scale near the circumference of the cathode-ray tube. Signals appear as radical deflections of the sweep. No bearing indication is given.

TYPE K DISPLAY.

Modification of the type A display. Employs a double trace with the second trace superimposed and offset for use with lobe-switching radar. Gives range and either bearing or elevation.

TYPE L DISPLAY.

Modification of the type A display. Employs a double trace back-to-back for aiming a lobe-switching radar. Gives range and either bearing or elevation.

TYPE M DISPLAY.

Modified type A display with a movable step

or ditch for accurate range measurement.

TYPE N DISPLAY.

Modified type A display. Employs a double trace with a movable step or ditch for accurate range measurement.

TYPE OF PIEZOELECTRIC CRYSTAL CUT.

Characteristic identifying the orientation of a piezoelectric crystal plate with respect to the axes of the crystal. Usually designated by symbols; for example, GT, AT, BT, CT, and DT identifying certain quartz crystal cuts having very low-temperature coefficients.

TYPE OF SERVICE GAIN.

Relative signal strengths required for satisfactory communication for various types of modulation and intended usages.

TYPE PPI-DISPLAY.

Type of presentation on a radar indicator in which the signal appears as a bright spot, with range indicated by distance from the center of the screen and bearing by its radial angle. (Reference: PPI INDICATOR.)

TYPE-PRINTED TELEGRAPHY.

Telegraphy in which the message is automatically printed at the receiving station.

U

U

U (UNDERGROUND).

1. Situated or placed below the surface of the ground.
2. Of or pertaining to underground.

U (UNKNOWN).

Track classification, in air defense, indicating a track cannot be otherwise classified within a specified period of time.

μ (MICROAMPERE).

One-millionth of an ampere.

UAL (UNIT AUTHORIZATION LIST).

Electrical accounting machine list of specified equipment authorized each unit. A list that formerly authorized unit support equipment only.

UAM. (UNDERWATER-TO-AIR MISSILE).**UFF. (UNIT ESSENTIAL EQUIPMENT).****UGC (UNDERGROUND CABLE).**

Cable installed below the surface of the ground.

h (MICROHENRY).

One-millionth of a henry.

UHF (ULTRA-HIGH FREQUENCY).

1. Frequency band; 300 to 3,000 mc.
2. Wavelength: 10 to 100 centimeters.

UK (UNITED KINGDOM) JOINT ALTERNATIVES.

Two or more cipher or code symbols which have the same plain language equivalent.

ULTRA X-RAYS.

Highly penetrating rays having even shorter wavelengths than gamma rays.

ULTRA-HIGH FREQUENCY.

1. Frequency band: 300 to 3,000 mc.
2. Wavelength: 10 to 100 centimeters.

ULTRA-HIGH-FREQUENCY BAND.

Frequency range from 300 to 3,000 mc.

ULTRA-HIGH-FREQUENCY GENERATOR.

Device for generating ultra-high-frequency alternating currents. The four main types are: Conventional negative-grid generators; positive-grid

or Barkhausen generators; magnetrons; velocity-modulation or electron-beam generators, such as the klystron.

ULTRA-HIGH-FREQUENCY LOOP.

Loop antenna, generally having a single turn, used to secure a nondirectional radiation pattern in the plane of the loop in ultra-high-frequency work. The pattern is doughnut-shaped in the perpendicular plane of the loop.

ULTRA-SHORT WAVES.

General term applying to radio waves shorter than 10 meters in wavelength (about 30 mc in frequency). Waves shorter than one meter are usually called microwaves.

ULTRADYNE RECEPTION.

Form of superheterodyne reception in which the intermediate frequency signal is obtained from auxiliary oscillations superposed on the plate circuit of the first vacuum tube.

ULTRAFAX.

System employing radio, facsimile, and television methods for transmitting printed information. Characterized by the great speed with which printed material may be transmitted over distances.

ULTRAMICROMETER.

Instrument for measuring very small displacements by electrical means, such as by the variation in capacitance resulting from the movement being measured.

ULTRASONIC.

1. Speeds between sonic and hypersonic.
2. Having a frequency above that of audible sound. (Reference: SUPERSONIC.)

ULTRASONIC DETECTOR.

Device for the detection and measurement of ultrasonic waves. Such a device may be mechanical, electrical, thermal, or optical in nature.

ULTRASONIC FREQUENCY.

Frequency lying above the audio range. The term is commonly applied to elastic waves propagated in gases, liquids, or solids.

ULTRASONIC GENERATOR.

Device for the production of ultrasonic waves. Such a device is usually piezoelectric or magnetostrictive.

ULTRASONICS.

General subject of sound in the frequency range above 20 kc per second.

ULTRAUDION.

Name applied to any of several special vacuum-tube circuits employing regeneration.

ULTRAUDION CIRCUIT.

Regenerative detector circuit in which a parallel resonant circuit is connected between the grid and the plate of a vacuum tube, and a variable capacitor is connected between the plate and cathode to control the amount of regeneration.

ULTRAUDION OSCILLATOR.

Variation of the Colpitts oscillator circuit.

ULTRAVIOLET.

Electromagnetic radiation at frequencies higher than those of visible light; wavelengths of less than 4000 angstrom units (A) ($1\text{A} = 10^{-10}$ meter).

ULTRAVIOLET LAMP.

Lamp providing a high proportion of ultraviolet radiation, such as various forms of arc lamps, mercury-vapor lamps, or incandescent lamps in bulbs of special glass, transparent to ultraviolet rays.

ULTRAVIOLET RAYS.

Rays having powerful actinic effects, can cause ionization, and can produce phosphorescent and photoelectric effects. Used extensively in medicine for curative purposes as artificial sunlight, and to stimulate plant growth. Not appreciably transmitted by ordinary glass.

UMBILICAL.

Electric cable providing connecting circuits to missile components. Stands in the launcher with control equipment located at a safe distance. The umbilical is ejected at liftoff.

UMBILICAL CORD.

Quickly detachable cable through which missiles

or rockets are powered and controlled until the moment of launching.

UMBRELLA ANTENNA.

Antenna in which the wires are guyed downward in all directions from a central pole or tower to the ground, somewhat like the ribs of an open umbrella.

UN (UNITED NATIONS).

World-wide organization of nations, the member nations being pledged to maintain international peace and security and to cooperate in establishing and maintaining political, economic, and social conditions favorable to such peace and security.

UNAMBIGUOUS RANGE.

Classified definition. (Reference: AFM 100-50.)

UNAMPLIFIED BACK BIAS.

Degenerative voltage developed across a fast time constant circuit within an amplifier stage itself.

UNBALANCE.

1. Differential mutual impedance or mutual admittance between two circuits which ideally would have no coupling.
2. Lacking the conditions for balance. Frequently used to mean having one side grounded.

UNBALANCED LINE.

Transmission line in which the voltage on the two conductors are not equal with respect to ground; for example, a coaxial line.

UNBALANCED WIRE CIRCUIT.

One whose two sides are inherently electrically unlike.

UNBIASED TELEPHONE RINGER.

Telephone ringer, the clapper driving element of which is not normally held toward one side or the other, so that the ringer will operate on alternating current. Such a ringer does not operate reliably on pulsating current.

UNBLANKING PULSE.

Voltage applied to a CRT to overcome bias and cause trace to be visible.

UNC (UNITED NATIONS COMMAND).

UNCERTAINTY PRINCIPLE.

Feature of the quantum mechanics of Heisenberg, which assumes that it is impossible to specify complete information about electron processes in terms of the usual geometrical coordinates and of time. Thus, the position and velocity of an electron cannot be simultaneously expressed.

UNCHARGED.

Having a normal number of electrons, and hence having no electrical charge.

UNCLD (UNCLASSIFIED).

Not having a security classification. Said of documents, information, lectures, equipment, etc.

UNCONDITIONAL JUMP.

Instruction which interrupts the normal process of obtaining instructions in an ordered sequence, and specifies the address from which the next instruction must be taken.

UNCORRELATING CROSSTOLD-IN.

Track status associated with surveillance information received from an adjacent semiautomatic sector which cannot be automatically correlated with radar data at the receiving sector.

UNDAMPED OSCILLATIONS.

Oscillations that have constant amplitude for their duration.

UNDAMPED WAVE.

Wave which has an unchanging amplitude.

UNDER-MODULATION.

Insufficient modulation.

UNDER-VOLTAGE PROTECTION.

Effect of a device operative on the reduction or failure of voltage to cause and maintain the interruption of power in the main circuit.

UNDER-VOLTAGE RELEASE.

Effect of a device operative on the reduction or failure of voltage to cause the interruption of power in the main circuit, but not to prevent the reestablishment of the main circuit on return of voltage.

UNDERBUNCHING.

Condition existing when the buncher voltage of a velocity-modulation tube is less than the value required for optimum bunching of electrons.

UNDERCOMPOUNDED.

Generator, designed so the output voltage drops as the load is increased.

UNDERCUTTING.

Cutting too shallow a groove or cutting with insufficient lateral movement of the stylus during sound recording.

UNDERDAMPING.

Condition of a system when the amount of damping is sufficiently small so that, when the system is subjected to a single disturbance, either constant or instantaneous, one or more oscillations are executed by the system.

UNDERDOME BELL.

Bell whose mechanism is mostly concealed within its gong.

UNDERGROUND CABLE.

Cable installed below the surface of the ground.

UNDERLAP.

1. Term used to describe recorded elemental areas that are smaller than normal. Refers to the space between the recorded elemental area in one recording line and the adjacent elemental area in the next recording line, or the elemental areas in the direction of the recording line.

2. Amount by which the effective height of the scanning spot falls short of the nominal width of the scanning line.

Note. When using a rectangular spot, underlap may be expressed as a percentage of the nominal width of scanning line.

UNDERLOAD RELAY.

Relay that operates when the load in a circuit drops below a certain value.

UNDERSHOOT.

Initial transient response to an undirectional change in input, which precedes the main transition and is opposite in sense.

UNDERTHROW DISTORTION.

Distortion resulting when the maximum amplitude of the signal wave front is less than the steady-state amplitude, which would be attained by a prolonged signal wave.

UNDERWATER SOUND PROJECTOR.

Electroacoustic transducer designed to convert electric waves into sound waves radiated in water for reception at a distance.

UNDISTORTED WAVE.

Periodic wave in which both the attenuation and velocity of propagation are the same for all sinusoidal components, and in which no sinusoidal component is present at one point that is not present at all points.

UNDULATING LIGHT.

Light operated to be continuously luminous but increasing and decreasing in intensity in cycling sequence.

UNDULATORY.

Pertaining to wave motion.

UNFACED QUARTZ.

Name given to masses of raw quartz without crystal faces.

UNFINISHED WAFER.

Name given to the unfinished and undiced slice, approximately of the correct orientation and thickness, obtained by sawing directly from a mother crystal or section.

UNGROUND SYSTEM.

System in which no point is deliberately connected to earth except through potential or ground detecting transformers or other very high impedance devices.

UNIDIRECTIONAL.

Flowing in only one direction, such as a direct current.

UNIDIRECTIONAL ANTENNA.

Antenna that has a single, well defined direction of maximum radiation intensity.

UNIDIRECTIONAL CURRENT.

Current which has either all positive or all negative values.

UNIDIRECTIONAL PULSES.

Single polarity pulses which all rise in the same direction.

UNIDYNE RECEPTION.

Radio reception employing a circuit in which the same battery serves for filament and plate voltages, with an additional electrode being used to prevent excessive space charge in the tube.

UNIFIED FIELD THEORY.

Mathematical theory developed by Einstein, involving Maxwell's electromagnetic theory and Einstein's mathematical theory of gravitation as special cases applying to all types of fields.

UNIFILAR.

Having or using only one fiber, wire, or thread.

UNIFILAR SUSPENSION.

Suspension of the moving system of a galvanometer or other instrument by a single fiber, wire, or thread whose torsion provides part or all of the restoring force.

UNIFORM FIELD.

Field in which, at the instant under consideration, the scalar (or vector) has the same value at every point in the region under consideration.

UNIFORM LINE.

Line which has identical electrical properties throughout its length.

UNIFORM PLANE WAVE.

Plane wave in which the electric and magnetic intensities have constant amplitude over the equiphase surfaces. Such a wave can only be found in free space at an infinite distance from the source.

UNILATERAL BEARING.

Bearing obtained with a radio direction finder having unilateral response, eliminating the chance of a 180° error.

UNILATERAL CIRCUIT.

Circuit in which all equipment is managed and operated by a single service.

UNILATERAL CONDUCTIVITY.

Conductivity in only one direction, as in a perfect rectifier.

UNIPOLE.

Hypothetical antenna radiating or receiving equally in all directions. A pulsating sphere is a unipole for sound waves. In the case of electromagnetic waves, unipoles do not exist physically but represent convenient reference antennas for expressing directive properties of actual antennas. (Reference: ISOTROPIC ANTENNA.)

UNIPOTENTIAL CATHODE.

Cathode to which heat is supplied by an independent heater element in a thermionic tube. (Reference: EQUIPOTENTIAL CATHODE, INDIRECTLY HEATED CATHODE.)

UNIT.

1. Distinct part, section, or component that can be regarded as an individual member of a related group.
2. Smallest whole number, hence one.
3. Determinate amount or quantity adopted as a standard of measurement for other amounts or quantities of the same kind.
4. Portion or subassembly of electronic computer which constitutes the means of accomplishing some inclusive operation or function, as: arithmetic unit.
5. (Electronic Warfare). Classified definition. (Reference: AFM 100-50.)
6. Subdivision, in air defense, of a combat or direction center section (for example, track initiation unit.)
7. Self contained group of elements of rope or chaff, the contents of which are intended to give a predetermined radar echo.

UNIT AUTHORIZATION LIST.

Electrical accounting machine list of specified equipment, consisting of unit mission equipment and/or unit support equipment, authorized to each individual T/D or T/O Unit.

UNIT CABLE CONSTRUCTION.

Method of cable manufacture in which the pairs of the cable are stranded into groups

(units) containing a certain number of pairs, and these groups stranded together to form the core of the cable.

UNIT CHARGE.

Electrical charge which will exert a repelling force of one dyne on an equal and like charge one centimeter away in a vacuum, assuming that each charge is concentrated at a point.

UNIT ESSENTIAL EQUIPMENT.

Portion of organizational equipment which is air transportable and required to perform and support, logistically and operationally, the assigned mission at a base to which base support equipment has been provided. Unit essential equipment may accompany personnel in unit and/or support aircraft.

UNIT LENGTH.

Basic element of time used in determining code speeds in message transmission.

UNIT MAGNETIC POLE.

Two equal magnetic poles of the same sign have unit value when they repel each other with a force of one dyne if placed one centimeter apart in a vacuum.

UNITS OF RESISTANCE.

Practical unit of resistance is the ohm. One ohm is the resistance of a column of pure mercury having a weight of 14.4521 grams, a uniform cross-section of one square millimeter, and a length of 106.3 centimeters at a temperature of 0° Centigrade (32° Fahrenheit).

UNITED STATES AIR FORCE SECURITY SERVICE.

Major air command of the USAF that develops, carries out, and supervises security measures within the USAF where such security measures require centralized direction or control.

UNITED STATES COMMUNICATIONS INTELLIGENCE BOARD.

Board reporting to the National Security Council, that determines national communications intelligence policy.

UNITY COUPLING.

Perfect magnetic coupling between two coils, so that all magnetic flux produced by the primary winding passes through the entire secondary winding.

UNITY POWER FACTOR.

Power factor of 1.0, obtained when current and voltage are in phase, as in a circuit containing only resistance or in a reactive circuit at resonance.

UNIVAC.

General-purpose digital computer, manufactured by Remington Rand, INC. It is designed for processing business data. Several other models such as the UNIVAC 60 and the UNIVAC SCIENTIFIC have been developed. The UNIVAC computer contains 5,600 electron tubes, 18,000 crystal diodes, and 300 relays. It requires 120 KVA of power and 1,250 feet of floor space. Magnetic tape is used for storage purposes. Mercury acoustical delay lines, in the form of mercury tanks, are employed for rapid access memory.

UNIVERSAL MOTOR.

Series-wound, or a compensated series-wound, motor which may be operated either on direct current or single-phase alternating current at approximately the same speed and output. These conditions must be met when the ac and dc voltages are approximately the same and the frequency of the alternating current is not greater than 60 cycles per second.

UNIVERSAL OUTPUT TRANSFORMER.

Output transformer having a number of taps on its winding to permit its use between the audio-frequency output stage and the loudspeaker of practically any radio receiver, by proper choice of connections.

UNIVERSAL RECEIVER.

Radio receiver capable of operating either from ac power lines or dc power lines without changes in internal connections. It has no power transformer.

UNIVERSAL SHUNT.

Type of shunt devised by Ayrton to increase the range of a galvanometer without changing the damping. (Reference: AYRTON SHUNT.)

UNIVERSE.

Infinite space in which the solar systems are found.

UNKNOWN.

Track classification indicating a track cannot be otherwise classified within a specified period of time.

UNLOADED ANTENNA.

One having no added inductance or capacitance.

UNMASKING ALTITUDE.

Term used in connection with guided missiles. It is the highest altitude at which a defender can identify a missile. (Reference: DECISION ALTITUDE.)

UNMODULATED.

Carrier signal having no modulation, such as that transmitted during moments of silence in radio programs.

UNMODULATED GROOVE.

Silent groove on a recording, cut without sound.

UNMODULATED KEYED CONTINUOUS WAVES.

Continuous waves that are broken up for telegraph signaling purposes by definite changes in either amplitude or frequency. (Reference: TYPE A1 WAVES.)

UNPITCHED SOUND.

Sound to which no definite pitch can be assigned.

UNSATURATED STANDARD CELL.

Cell in which the electrolyte is not saturated at ordinary temperatures. (This is the commercial type of cadmium standard cell commonly used in the United States.)

UNSCOB (UNITED STATES SPECIAL COMMITTEE ON THE BALKANS).**UNSV (UNSERVICEABLE).****UNTUNED.**

Not resonant at any of the frequencies being handled.

UPPER SIDEBAND.

Higher of two frequencies or two groups of frequencies produced by a modulation process. (Reference: SIDEBANDS.)

UPREAL. (UNIT PROPERTY RECORD AND EQUIPMENT AUTHORIZATION LIST).

UPSET DUPLEX SYSTEM.

Dc telegraph system in which a station between any two duplex equipments may transmit signals by opening and closing the line circuit, thereby causing the signals to be received by upsetting the duplex balance.

UPSS (UNIVERSAL POLAR STEREOGRAPHIC SYSTEM).

UR (UNSATISFACTORY REPORT).

Report submitted on a standard form of an unsatisfactory condition found in an item of equipment or in some technical procedure.

UR. (YOUR, YOURS).

URMSG (REFERENCE YOUR MESSAGE).

URANIUM.

Radioactive element (symbol U) having an atomic number of 92 and an atomic weight of 238.07. It is one of the radioactive elements capable of atomic fission.

URANIUM FISSION.

Splitting of the uranium nucleus.

URANIUM SERIES.

Radioactive series beginning with uranium and including radium.

UREA PLASTIC MATERIAL.

Thermosetting plastic material that has good dielectric qualities used for radio receiver cabinets, instrument housing, etc.

URSI (INTERNATIONAL SCIENTIFIC RADIO UNION).

International organization established to develop, on an international basis, scientific studies and programs pertaining to radio, electricity, and related subjects.

US (UNITED STATES) JOINT VARIANTS.

Two or more cipher or code symbols which have the same plain language equivalent.

USA (UNITED STATES ARMY).

Land military forces of the US, including the Regular Army, and National Guard of the United States, and the Army Reserve. Often shortened to Army.

USAF (UNITED STATES AIR FORCE).

Official name given the air arm of the United States military force, responsible for the development, training, equipment, and employment of aviation forces both combat and service.

USAF CMBAT LOGISTICS NETWORK.

World-wide integrated network comprised of land lines, cable, and radio channels designed to carry Air Force digitalized data traffic between all Major Air Force Commands, Air Force Bases, Air Materiel Areas, Depots, Air Force Contractors, other Department of Defense data systems, points of entry, and other locations as authorized.

USAFE (UNITED STATES AIR FORCES IN EUROPE).

USAFI (UNITED STATES ARMED FORCES INSTITUTE).

Agency of the Department of Defense established to provide off-duty educational opportunities to members of the Armed Forces of the United States who are serving on extended duty.

USAFIT (UNITED STATES AIR FORCE INSTITUTE OF TECHNOLOGY).

Former designation of the Institute of Technology, USAF, the change being effected 1 September 1955.

USAFR (UNITED STATES AIR FORCE RESERVE).

USAFSS (UNITED STATES AIR FORCE SECURITY SERVICE).

Major air command of the USAF that develops, carries out, and supervises security measures within the USAF, where such security measures require centralized direction or control.

USAG (UNITED STATES ARMY GROUP, AMERICA).

USAGE COUNT.

Count indicating the number of times a circuit or piece of equipment is used during a certain period.

USAHS. (UNITED STATES ARMY HOSPITAL SHIP).

USATRA (UNITED STATES AIR ATTACHE).

USAIRMILCOMUN (UNITED STATES AIR FORCE REPRESENTATIVE UN MILITARY STAFF COMMITTEE).

USARACS (UNITED STATES ARMY ALASKA COMMUNICATIONS SYSTEM).

USARFANT (UNITED STATES ARMY FORCES, ANTILLES).

USARMYILCOMUN (UNITED STATES ARMY REPRESENTATIVE UN MILITARY STAFF COMMITTEE).

USAT (UNITED STATES ARMY TRANSPORT).

USC (UNITED STATES CODE.)

USCG (UNITED STATES COAST GUARD).

Military or police force responsible for certain duties along the coasts of the US, especially in enforcing customs, immigration, and navigational laws, and for maintenance of the International Ice Patrol. Usually shortened to Coast Guard.

USCGA (UNITED STATES COAST GUARD ACADEMY).

Service academy of the US Coast Guard, founded 31 July 1876 on board a schooner, and established in 1910 at New London, Connecticut.

USCGC (UNITED STATES COAST GUARD CUTTER).

USCIB (UNITED STATES COMMUNICATIONS INTELLIGENCE BOARD).

μ sec (MICROSECOND).

One-millionth of one second.

USFA (UNITED STATES FORCES IN AUSTRIA).

USLO (UNITED STATES LIAISON OFFICER).

USM (UNDERWATER-TO-SURFACE MISSILE).

USMA (UNITED STATES MILITARY ACADEMY).

Service academy of the United States Army, authorized by act of Congress, 16 March 1802, and established at West Point, New York.

USMC (UNITED STATES MARINE CORPS).

USMEMMILOMUN (UNITED STATES MEMBERS UNITED NATIONS MILITARY STAFF COMMITTEE).

USMILATTACHE (UNITED STATES MILITARY ATTACHE).

USMILCOMUN (UNITED STATES DELEGATION UN MILITARY STAFF COMMITTEE).

USMILLIAS (UNITED STATES MILITARY LIAISON OFFICE).

USMS (UNITED STATES MARITIME SERVICE).

USN (UNITED STATES NAVY).

Naval establishment of the United States. Often shortened to Navy.

USNA (UNITED STATES NAVAL ACADEMY).

Service academy of the United States Navy, founded at Annapolis, Maryland, on 10 October 1845.

USNAVYMILCOMUN (UNITED STATES NAVAL REPRESENTATIVE UN MILITARY STAFF COMMITTEE).

USNS (UNITED STATES NAVAL SHIP CIVILIAN MANNED).

USP&DO (UNITED STATES PROPERTY AND DISPERSING OFFICER).

USREPMILCOMUN (UNITED STATES REPRESENTATIVE UN MILITARY STAFF COMMITTEE).

USS (UNITED STATES SHIP).

USWB (UNITED STATES WEATHER BUREAU).

UT (UTILITY).

1 APRIL 1959

**UTILIZATION OF ENEMY ELECTROMAGNETIC
RADIATIONS.**

Actions taken to utilize enemy electromagnetic radiations as aids to navigation.

**UTMS (UNIVERSAL TRANSVERSE MERCATOR
SYSTEM).**

μv (MICROVOLT).

One-millionth of one volt.

V

V.

Additional voice feature on VHF.

V (VOLT).

Unit of electromotive force.

V ANTENNA.

V-shaped arrangement of conductors, the two branches of the V being fed equally in opposite phase at the apex.

V-BEAM SYSTEM.

Radar system employing an antenna arrangement in which two fan-shaped beams, one vertical and the other inclined, intersect at ground level. In the V-beam system of measuring elevation, the beam antenna system rotates continuously about a vertical axis. The time elapsing between the receipt of echoes on the two beams from an object is a measure of its elevation.

V-CUT.

Type of crystal oscillator cut in which the major plane surfaces are not parallel to X, Y, or Z.

VACUUM.

Condition where sufficient air has been removed from a container so that any remaining gas will not affect the characteristics of the device beyond an allowable amount. Theoretically, a perfect vacuum is an enclosed space from which all the air and gases have been removed; this is never attained in actual practice.

VACUUM GAGE.

Device that indicates the absolute gas pressure in a vacuum system, such as in the evacuated parts of a mercury-arc rectifier. The absolute gas pressure is expressed in microns, one micron being the pressure that will support a column of mercury 1/1,000 millimeter high. The two types of vacuum gages in common use are the McLeod gage and the hot-wire gage.

VACUUM PHOTOTUBE.

Phototube evacuated to such a high degree that ionization cannot occur.

VACUUM SEAL.

Airtight junction between component parts of

an evacuated system.

VACUUM SWITCH.

Switch whose contacts are inclosed in an evacuated bulb, usually to minimize sparking.

VACUUM TANK.

Airtight metal chamber which contains the electrodes and in which the rectifying action takes place.

VACUUM TUBE.

Device consisting of an evacuated enclosure containing a number of electrodes between two or more, of which conduction of electricity through the vacuum or contained gas may take place.

VACUUM-TUBE CHARACTERISTICS.

Data that show how a vacuum tube will operate under various electrical conditions.

VACUUM-TUBE KEYING.

Code-transmitter keying system in which a vacuum tube is connected in series with the plate supply lead going to the center tap of the winding in the plate circuit of the final stage with the grid of the tube connected to its filament through the transmitting key. When the key is open, the tube blocks, interrupting the plate supply to the output stage. Closing the key allows plate current to flow through the keying tube and the output tubes.

VACUUM-TUBE MODULATOR.

Modulator employing a vacuum tube as the modulating element.

VACUUM-TUBE OSCILLATOR.

Circuit utilizing a vacuum tube to convert dc power into ac power at a desired frequency.

VACUUM-TUBE RECTIFIER.

Tube which changes an alternating current to an unidirectional pulsating direct current.

VACUUM-TUBE TRANSMITTER.

Radio transmitter in which vacuum tubes are utilized to convert the applied electric power into radio-frequency power.

VACUUM-TUBE VOLTMETER.

Device utilizing the characteristics of a vacuum tube for measuring voltages.

VALENCE.

Measure of the extent to which an atom is able to combine directly with other atoms. It is believed to depend on the number and arrangement of the electrons in the outer-most shell of the atom.

VALENCE ELECTRON.

One of the outer electrons of an atom, believed to be responsible for chemical combination, visible light, and thermal radiation.

VALLEY.

Dip or low spot in a drawn curve between two high spots or peaks.

VALVE.

1. British term for a vacuum tube.
2. Device permitting current flow in one direction only, such as a rectifier.

VALVE ACTION.

Process involved in the operation of an electrochemical valve.

VALVE RATIO.

Valve ratio in an electrochemical valve is the ratio of the impedance to current flowing from the valve metal to the compound or solution to the impedance in the opposite direction.

VALVE TUBE.

Electric valve consisting of a vacuum tube having a hot filament and one electrode. This term is used in radiology and corresponds to a thermionic rectifier.

VALVE, GAS ADMITTANCE.

Valve selected and designated for connecting gas tanks for routine recharging of cables.

VAN (VELOCITY INERTIA NAVIGATION) SYSTEM.

VAN DE GRAAFF GENERATOR.

Electrostatic generator utilizing an endless moving belt of insulating material to collect electric charges by induction and discharge them inside a large hollow spherical terminal to produce a high direct voltage.

VANE-TYPE INSTRUMENT.

Measuring instrument utilizing the force of repulsion between fixed and movable magnetized iron vanes, or the force existing between a coil and a pivoted vane-shaped piece of soft iron, to move the indicating pointer.

VANE-TYPE MAGNETRON.

Cavity magnetron in which the walls between adjacent cavities have plane surfaces.

VAPOR PRESSURE.

Pressure of the vapor of a liquid that is kept in confinement so that the vapor can accumulate above it, as in a mercury-vapor rectifier tube.

VAPORTIGHT.

So inclosed that vapor will not enter the inclosure.

VAR (VARIABLE).

VAR (VISUAL-AURAL RANGE).

Radio range, usually operating in the VHF band, which provides aural sector identification and visual course indicator. The range produces two visual legs which define the primary navigation course, and are flown by visual indication on the airborne receiving equipment. The aural sector identification results in two aural legs, or an aural course, which is at right angles to the visual course.

VAR.

Unit of reactive power. One var (the name adopted by the International Electrotechnical Commission in 1930) is one reactive volt-ampere.

VAR METER.

Instrument for measuring reactive volt-amperes.

VAR-HOUR METER.

Electrical meter used for measuring and registering reactive volt-ampere hours.

VARIABLE CAPACITOR.

Capacitor whose capacitance may be varied from maximum to minimum by mechanical means.

VARIABLE COUPLING.

Inductive coupling that can be varied by moving windings with relation to others.

VARIABLE FIELD.

Field in which the scaler (or vector) at any point changes during the time under consideration.

VARIABLE INCREMENTAL LIMITING CIRCUIT.

Corrects degrading effects upon APS-23 mapping display of jamming signals of two levels.

VARIABLE INDUCTANCE.

Coil (inductor) in which inductance value can be varied.

VARIABLE RELUCTANCE MICROPHONE.

Microphone which depends for its operation on variations in the reluctance of magnetic circuit.

VARIABLE RESISTANCE.

Resistor in which value can be changed at will while in use.

VARIABLE RESISTOR.

Wire-wound or composition resistor, the value of which may be changed. (Reference: RHEO-STAT, POTENTIOMETER.)

VARIABLE SPACING.

During encryption on cipher machines, the random use between words of: No space; normal space; more than one space.

VARIABLE SPEED SCANNING.

Scanning method whereby the speed of deflection of the scanning beam in the cathode-ray tube of a television camera is governed by the optical density of the film being scanned.

VARIABLE TRANSFORMER.

Iron-core transformer having provisions for varying its output voltage over a limited range or continuously from zero to maximum output voltage, generally by means of a contact arm moving along exposed turns of the secondary winding.

VARIABLE-AREA RECORDING.

System of recording sound on motion-picture film in which the width or area of the solid black sound track on the film varies constantly in accordance with audio-frequency signal variations.

VARIABLE-DENSITY RECORDING.

System of recording sound on motion-picture film

in which the sound track is of uniform width but changes in density in accordance with audio-frequency signal variations.

VARIABLE-MU TUBE.

Vacuum tube in which control grid is irregularly spaced, so that at different points within its operating range the grid exercises a different amount of control on the electron stream. This shifts the operating point from one section of its characteristic curve to another, thus changing the amplification factor (μ).

VARIABLE-RELUCTANCE PICKUP.

Phonograph pickup which depends for its operation on the variation in the reluctance of a magnetic circuit.

VARIABLE-SPEED MOTOR.

Motor in which speed can be adjusted within certain limitations, regardless of load.

VARIAC.

Trade name for a variable transformer.

VARIAC TRADE NAME.

Autotransformer with a torodial winding on which moves a sliding contact, giving a continuously-adjustable output voltage.

VARIANTS.

Two or more cipher or code symbols which have the same plain language equivalent.

Note. Equivalent to alternatives, used by UK service.

VARIATION.

Angular difference between true and magnetic bearings or headings.

VARIETY LOOP TEST.

Method of using a Wheatstone bridge to determine the distance from the test point to a fault in a telephone or telegraph line or cable.

VARINDOR.

Inductor in which inductance varies markedly with the current in the winding.

VARIOCOUPLER.

Two independent inductors so arranged mechanically that their mutual inductance (coupling) can be varied.

VARIOLOSSER.

Device in which loss can be controlled by a voltage or current.

VARIOMETER.

Variocoupler having its two coils connected in series, and so mounted that the movable coil may be rotated within the fixed coil, thus changing the total inductance of the unit.

VARIOPLEX.

Telegraph switching system which establishes connections on a circuit-sharing basis between a multiplicity of telegraph transmitters in one locality and respective corresponding telegraph receivers in another locality over one or more intervening telegraph channels. Maximum usage of channel capacity is secured by momentarily storing the signals and allocating circuit time in rotation among those transmitters having intelligence in storage.

VARISTOR.

1. Two-terminal circuit element, composed of an electronic semi-conductor and suitable contacts, which has a markedly non-linear volt-ampere characteristic.
2. Device or assemblage of devices which has the property of changing resistance influenced by the voltage applied.
3. Device which exhibits nonlinearity between voltage applied and current which flows as a result of that voltage.
4. Device whose resistance lowers when a high voltage is present. Used to shunt away harmful voltages.

VARLEY.

Method of determining the position of a cable fault.

THREE-WIRE METALLIC. Varley loop using a third wire for a return instead of ground.

VARLEY LOOP.

Arrangement of the Wheatstone Bridge circuit which gives in one measurement the difference in resistance between the two wires of the loop.

VARNISHED CAMBRIC.

Linen or cotton fabric that has been impregnated with varnish or insulating oil and baked. Used for insulating purposes in the construction of coils and other radio parts.

VARYING DUTY.

Requirement of service that demands operation at loads and for intervals of time, both of which may be subject to wide variation.

VARYING-SPEED MOTOR.

Motor, the speed of which varies with the load, ordinarily decreasing when the load increases, such as a series motor or an induction motor with large slip.

VARYING-VOLTAGE CONTROL.

Form of armature-voltage control obtained by impressing on the armature of the motor a voltage which varies considerably with change in load, with a consequent change in speed, such as may be obtained from a differentially compound-wound generator or by means of resistance in the armature circuit.

VAULT, CABLE.

Room in a building, usually in a basement, where outside cables are spliced to their tip cables.

VAULT-TYPE TRANSFORMER.

Nonsubmersible transformer designed for installation in vaults not subject to flooding.

VCS (VISUAL CALL SIGN).

Call sign primarily for visual signalling.

VDC (VOLTS-DIRECT CURRENT).

VDCT (DC TEST VOLTS).

VDCW(DC WORKING VOLTS).

VDP (VEHICLE DEADLINED FOR PARTS) REQUISITION.

VECTOR.

1. Complex entity which is representative of a directed magnitude, as of a force, or a velocity.
2. Instruction to an interceptor to follow a prescribed heading in air defense procedures.

VECTOR ADMITTANCE.

Ratio for a single sinusoidal current and potential difference in a portion of a circuit of the corresponding complex harmonic current to the corresponding complex potential difference.

VECTOR DIAGRAM.

Arrangement of vectors showing the relations between alternating quantities having the same frequency.

VECTOR FIELD.

In a given region of space, the totality of value of some vector quantity which has a definite value at each point of the region. Example: The distribution of magnetic intensity in a region surrounding a conductor carrying a current is a vector field.

VECTOR IMPEDANCE.

Ratio for a simple sinusoidal current and potential difference in a portion of a circuit of the corresponding complex harmonic potential difference to the corresponding complex current.

VECTOR MESSAGE.

Situation-display message, in SAGE operation, which projects a line on a situation-display tube to indicate approximate speed and heading of a track; to illustrate geographic boundaries; etc.

VECTOR POWER .

Vector quantity equal in magnitude to the square root of the sum of the squares of the active power and the reactive power. Unit is the vector-ampere.

VECTOR POWER FACTOR.

Ratio of the active power to the vector power. It is the same as power factor in the case of sinusoidal quantities.

VECTOR QUANTITY.

Quantity that has both magnitude and direction. Examples of physical quantities that are vectors are: Displacement, velocity, force, and magnetic intensity.

VECTOR REPRESENTATION OF SIMPLE SINUSOIDAL QUANTITY.

Simple sinusoidal quantity can be represented

by the vector which represents the corresponding complex sinusoidal quantity. The vector may be considered as rotating or as stationary corresponding to some chosen instant of time.

VEH (VEHICLE).

1. In essence, any contrivance or medium used to carry a load from one place to another.
2. In concrete applications, any conveyance for either land or air transport.
3. In restricted usage, a carriage or moving support on the ground only, exclusive of aircraft and vessels; mounted on wheels, tracks, runners, rollers, or any combination of these, used to move persons or things from one place to another.
4. In analysis of a weapons system, that component that constitutes the carrier.

VEHICLE DEADLINE FOR PARTS REQUISITION.

Priority requisition submitted for maintenance parts required to return an Air Force Vehicle to fully operational status.

VELOCITY.

Time rate of change of a position vector of that point with respect to an inertial frame. In most cases the approximation is made that axes fixed to the earth constitute an inertial frame.

VELOCITY CONTROL.

Variation of sweep rate on a moving target indicator and velocity indicator.

VELOCITY FILTERING.

Classified definition. (Reference: AFM 100-50.)

VELOCITY LEVEL.

Velocity level of a sound (in decibels) is 20 times the logarithm to the base 10 of the ratio of the particle velocity of the sound to the reference particle velocity.

VELOCITY MERIT.

Ratio of velocity (in degrees per second) to angular lag (in degrees) over linear range of the servo system.

VELOCITY MICROPHONE.

Microphone in which the electric output substantially corresponds to the instantaneous particle velocity in the impressed sound wave.

VELOCITY MODULATION.

Modification of an electron stream by alternately accelerating and decelerating the electrons with a period comparable with the total transit time.

VELOCITY OF LIGHT.

Physical constant equal to 2.99796×10^{10} centimeters per second. More conveniently, the velocity of light can be expressed as: 186,280 statute miles per second; 161,750 nautical miles per second; 328 yards per microsecond.

VELOCITY OF PROPAGATION.

Velocity at which a disturbance is radiated as a wave through a medium. For light, this velocity is approximately 186,000 miles per second, with the velocity of radio waves being the same.

VELOCITY OF RADIO PROPAGATION.

Velocity of radio propagation, within the accuracy demanded of radar equipment, is usually taken as the velocity of light, 2.998×10^8 m/sec, or 299.8 m/micro-sec. The following table gives the unit propagation velocities:

<i>Velocity (travel/ unit time)</i>	<i>Reciprocal (time/unit travel)</i>
299.8 m/micro-sec.	0.003336 micro- sec/m
983.6 ft/micro-sec.	0.001017 micro- sec/ft
327.9 yd/mico-sec.	0.003050 micro- sec/yd
0.1863 statute mi/micro-sec.	5.368 micro-sec/ statute mile
0.1618 nautical mi/micro-sec.	6.180 micro-sec/ nautical mile

VELOCITY RESONANCE.

Resonance in which the angular phase difference between the fundamental components of the oscillation and the applied agency is 90° . (Reference: RESONANCE.)

VELOCITY SHAPING.

Classified definition. (Reference: AFM 100-50.)

VELOCITY SPECTROGRAPH.

Apparatus for separating an emission of electrically charged particles into distinct streams in accordance with their speed by means of magnetic or electric deflection.

VELOCITY-MODULATED AMPLIFIER.

Amplifier which employs velocity modulation to amplify radio frequencies.

VELOCITY-MODULATED OSCILLATOR.

Oscillator which employs velocity modulation to produce radio-frequency power.

VELOCITY-MODULATED TUBE.

Vacuum-tube oscillator which produces high-frequency oscillations induced by the fields associated with bunches of electrons in transit.

VELOCITY-MODULATED GENERATOR.

Ultra-high-frequency vacuum tube in which an originally continuous stream of electrons of uniform velocity is transformed at a certain point, by application of a radio-frequency voltage, into successive bunches or waves of electrons.

VER (VERIFY, VERIFICATION).

VERDET'S CONSTANT.

Coefficient that determines the angle of rotation of the plane of polarization in a beam of plane-polarized light passing through certain materials in a magnetic field.

VERIFICATION.

Process of checking the results of one data transcription against the results of another data transcription. Both transcriptions usually involve manual operations. (Reference: CHECK.)

VERIFY.

Ensure that the meaning and phraseology of the transmitted message conveys the exact intention of the originator.

VERNIER.

Device applied to the graduated scale on many instruments which serves, at the same time, as an

index and as a means of subdividing the smallest scale unit into tenths or other equal parts. Named for its inventor, Pierre Vernier.

VERNIER CAPACITOR.

Variable capacitor placed in parallel with a larger tuning capacitor to provide a finer adjustment after a larger unit has been set approximately to the desired position.

VERNIER DIAL.

Type of tuning dial in which each complete rotation of the control knob causes only a fraction of a revolution of the main shaft, permitting fine and accurate adjustment. Used chiefly for tuning radio equipment.

VERTEX PLATE.

Matching plate placed at the vertex of a reflector.

VERTICAL ANTENNA.

Vertical steel tower, metal rod, or suspended wire used as an antenna.

VERTICAL AXIS.

Coincides in position with the Z direction, optic axis and three-fold symmetry axis.

VERTICAL BREAK SWITCH.

Switch in which the travel of the blade is in a plane perpendicular to the plane of the base mounting.

VERTICAL CENTERING CONTROL.

Control provided in a television receiver or cathode-ray oscilloscope to shift the position of the entire image vertically in either direction on the screen.

VERTICAL COMPLIANCE-DISK RECORDING.

Ability of a reducing stylus to move in a vertical direction while in the reproducing position on a record.

VERTICAL CONTROL.

1. Control that determines positions with respect to elevations only, specifically leveling.
2. Control for vertically centering or moving the trace or spot on an oscilloscope.

VERTICAL DEFLECTION ELECTRODES.

Pair of electrodes that serves to move the electron beam up and down on the fluorescent screen of a cathode-ray tube employing electrostatic deflection.

VERTICAL FIELD-STRENGTH DIAGRAM.

Representation of the field strength at a constant distance from an antenna and in a vertical plane passing through the antenna.

VERTICAL GAIN REDUCTION.

Technique whereby the gain reduction in a vertical plane is controlled with stacked beam radars because each beam acts like an independent radar which listens in a different vertical sector during the receive cycle.

VERTICAL HOLD CONTROL.

Hold control that changes the frequency of the vertical sweep oscillator in a television receiver.

VERTICAL POLARIZATION.

1. Electric field (E vector) perpendicular to the horizon. An antenna in which the dipoles are vertically polarized.
2. When the electrostatic component of a radio wave has its lines of force perpendicular to the plane of the earth, the wave is said to be "vertically polarized." Under this system, transmitting and receiving antennas are placed in a vertical plane.

VERTICAL RADIATOR.

Vertical transmitting antenna. The two types and the grounded shunt-excited vertical radiator.

VERTICAL RECORDING.

Recording wherein the groove modulation is in a plane tangent to the groove and normal to the surface of the record. (Reference: HILL AND DALE RECORDING.)

VERTICAL SWEEP.

Downward movement of the scanning beam from top to bottom of the picture being televised.

VERTICAL SWITCHBOARD.

Switchboard composed of vertical panels.

VERTICAL-INCIDENT TRANSMISSION.

Transmission of a radio wave vertically to the ionosphere and back. Vertical-incident measurements generally are made to determine the characteristics of the ionosphere. These are converted into oblique-incidence values by the use of transmission curves.

VERTICALLY POLARIZED WAVE.

1. Electromagnetic wave whose electric vector is in the vertical plane.
2. Linearly polarized wave whose magnetic field vector is horizontal.

VERY-HIGH FREQUENCY.

1. Frequency band: 30 to 300 mc.
2. Wavelength: 1 to 10 meters.
3. Metric waves.

VERY-LONG RANGE.

Classification of ground radar sets by slant range. Applied to equipment with a maximum range exceeding 250 miles.

VERY-LOW FREQUENCY.

1. Frequency band: 0.01 to 0.03 mc.
2. Wavelength: 10,000 to 30,000 meters.

VERY-SHORT RANGE.

Classification of ground radar sets by slant range. Applied to equipment with a maximum range of less than 25 miles.

VESTIGIAL.

Pertaining to a remnant or remaining part.

VESTIGIAL SIDEBAND.

AM transmission, in which the vestigial sideband is the transmitted portion of one sideband which has been largely suppressed by a transducer having a gradual cutoff in the neighborhood of the carrier frequency.

VESTIGIAL-SIDEBAND TRANSMISSION.

System of single side band facsimile transmission in which the undesired sideband is eliminated in a special manner. The carrier is transmitted at half voltage and the sum of the upper and the lower side band components of each modulating frequency is constant.

VESTIGIAL-SIDEBAND TRANSMITTER.

Amplitude-modulated radio transmitter in which one complete sideband and a portion of the other sideband are intentionally transmitted.

VF (VOICE FREQUENCY) TELEPHONE REPEATER.

VFR (VISUAL FLIGHT RULES).

VFTG (VOICE FREQUENCY TELEGRAPH) SYSTEM.

VHF (VERY-HIGH FREQUENCY).

1. Frequency band: 30 to 300 mc.
2. Wavelength: 1 to 10 meters.
3. Metric waves.

VHF OMNI-RANGE.

Standard 200-watt omni-range operating within the radio-frequency band of 112-118 mc.

VHF/DF (VERY HIGH FREQUENCY DIRECTION FINDING).

VIA TRUNK CIRCUIT.

Trunk circuit which may be used to interconnect loop circuits and other via trunk circuits.

VIBRATING BELL.

Bell having a mechanism designed to strike repeatedly when, and as long as actuated.

VIBRATING CIRCUIT.

Auxiliary local timing circuit associated with the main line receiving relay, or a telegraph circuit for the purpose of assisting the operation of the relay, when the definition of the incoming signals is indistinct.

VIBRATING DETECTION SYSTEM.

Vibration detection system, in protective signaling, is a system for the protection of vaults by the use of one or more detector buttons firmly fastened to the inner surface in order to pick up vibration.

VIBRATING-REED RECTIFIER.

Frequency meter consisting of a row of steel reeds, each having a different natural frequency. All are excited by an electromagnet that is fed with the alternating current whose frequency is

to be measured. The reed, whose frequency corresponds most nearly with that of the current, vibrates. The frequency value is read on a scale beside the row of reeds.

VIBRATION.

Periodic motion of an elastic body or medium in alternately opposite directions from the position of equilibrium so that some value is continually changing in such a manner that it passes through maximum and minimum.

VIBRATION GALVANOMETER.

Type of ac galvanometer in which the natural oscillation frequency of the moving element is equal to the frequency of the current being measured.

VIBRATION ISOLATION.

Property of a shock mount by which the applied vibration amplitudes are attenuated. The vibration frequencies generally encountered are 1,000 to 3,000 vibrations per minute on aircraft and 300 to 1,200 vibrations per minute on ships.

VIBRATION METER.

Instrument used to measure the displacement, velocity, and acceleration associated with mechanical vibration. In one form it consists of a piezoelectric vibration pick-up, having uniform response from 2 to 1,000 cycles, feeding an amplifier having an indicating meter at its output.

VIBRATION MODE.

(Reference: MODE OF VIBRATION.)

VIBRATION PICK-UP.

Form of microphone designed to respond to mechanical vibrations rather than to sound waves. One type employs a piezoelectric unit in which twisting or bending of a Rochelle salt crystal generates a voltage that varies in accordance with the vibration being analyzed.

VIBRATOR.

1. Electromagnetic device which is used to change a continuous steady current into a pulsating current.
2. Vibrating reed, driven like a buzzer, with contacts arranged to supply direct current to two

windings of a transformer so that alternating current is supplied from another winding to the load.

3. Periodically moving or swinging to and fro in alternately opposite direction from the position of equilibrium.

VIBRATOR POWER SUPPLY.

Power supply using a vibrator to produce the varying current necessary to actuate a step-up transformer, the output of which is then rectified and filtered.

VIBROGRAPH.

Apparatus for recording mechanical vibrations.

VIBROSCOPE.

Apparatus consisting of tuning forks vibrating at right angles, used by Lissajous for studying harmonic motions.

VICTIM.

Term used to describe the electronic equipment, or user thereof, against which ECM is being employed.

VIDEO.

1. Latin word meaning "I see." It is applied as a prefix to the name of television parts or circuits which carry picture signals.

2. Radar or television signals which actuate the cathode-ray tube; frequencies extending from approximately 60 cycles to several megacycles per second.

3. Pertaining to the bandwidth and spectrum position of the signal resulting from television scanning.

Note. In current usage, video denotes a bandwidth in the order of megacycles and a spectrum position that goes with a dc carrier.

VIDEO AMPLIFIER.

Wide-band amplifier capable of amplifying video frequencies. Used for amplifying pulses in radar and television. (Reference: PULSE AMPLIFIER.)

VIDEO AMPLITUDE LIMITING.

Classified definition. (Reference: AFM 100-50.)

VIDEO DISCRIMINATION.

Radar circuit used to reduce the frequency band of the video amplifier stage in which it is used.

VIDEO FREQUENCIES.

Frequencies of modulated signals which may be applied to a cathode-ray tube to produce a picture or display.

VIDEO FREQUENCY.

1. Band of frequencies extending from approximately 100 cycles per second to several megacycles per second.
2. Frequency of the voltage resulting from television scanning. Range from zero to four megacycles or more. (Reference: VISUAL FREQUENCIES.)

VIDEO MAPPING.

Procedure whereby a chart of an area is superimposed on a radar display.

VIDEO SIGNAL.

Picture signal in a television system. This term is generally applied to the signal as it exists at the output of a television camera, before the addition of the synchronizing pulses.

VIDEO-FREQUENCY AMPLIFIER.

Arrangement of one or more vacuum-tube stages designed to handle the entire range of video frequencies and amplify them after demodulation in a television receiver. Used also in television stations to amplify the output of the television camera.

VIDICON.

Camera tube which has a photoconductive type of light-sensitive surface and a scanning beam of low-velocity electrons. Used in industrial television cameras.

VIEWING SCREEN.

Medium that converts the useful energy of the electrons in the beam of a cathode-ray tube into visible radiation. The screen generally consists of a coating of fluorescent material on the inside surface of the large end of the cathode-ray tube.

VIKING.

High altitude research missile developed for the Navy to investigate: The physical state of the upper atmosphere to 200 miles; the nature and properties of the ionosphere; solar and terrestrial radiations; and the physics of high energy particles by high altitude cosmic ray studies. The nomenclature is RIV-N-12a. It is rocket powered and has attained an altitude of 158 miles and a speed of 4300 miles per hour. Guidance is by gyro-controlled tilting of the entire thrust unit. The missile is approximately 42 feet long, 40 inches in diameter, and has a fin span of approximately 9 feet. Gross weight is approximately 15,000 pounds.

VILLARI EFFECT.

Phenomenon in which a change in magnetic induction occurs when a mechanical stress is applied along a specific direction to a magnetic material having magnetostrictive properties.

VINYL RESIN.

Soft plastic material sometimes used for pressings when absence of needle scratch is preferable to long life, as in transcriptions for broadcast purposes.

VIP (VERY IMPORTANT PERSON).

Person, either military or civilian, who by virtue of his high rank or important duty, is accorded special consideration or deference, especially during travel or attendance at a conference.

VIRTUAL CATHODE.

Electron cloud that forms around an outer grid in a thermionic vacuum tube when an inner grid is maintained at a slightly positive potential with respect to the cathode.

VIRTUAL HEIGHT.

Height of the equivalent reflection point that will cause a radio wave to travel to the ionosphere and back in the same time required for an actual reflection. In determining the virtual height, the radio wave is assumed to travel at uniform speed and the height is determined by the time required to go to the ionosphere and back at the assumed velocity of light.

VIRTUAL IMAGE.

Optical counterpart of an object, formed at imaginary focuses by prolongations of light rays. The image that appears to be behind an ordinary mirror is a virtual image.

VIRTUAL PPI REFLECTOSCOPE.

Device for superimposing a virtual image of a chart on the PPI pattern. The chart is usually prepared with white lines on a black background to the scale of the PPI range scale.

VIS (VISUAL).

Means of communication. Methods of transmission which can be received by optical means, such as flashing light, hand flags, pyrotechnics, panels, flaghoist, and colored lights.

VISIBLE RADIATION.

Radiation having wavelengths ranging from about 4,000 to 8,000 angstrom units, corresponding to the visible spectrum of light.

VISUAL CALL SIGN.

Call sign provided primarily for visual signaling.

VISUAL COMMUNICATION.

Communication purposes of optical signs, such as flags and lights.

VISUAL FLIGHT RULES.

Rules limiting the flying of manned airborne objects to given minimum altitudes and visibility under those conditions when visual contact with the earth's surface is possible.

VISUAL FREQUENCIES.

Frequencies existing in the output of a television camera as a result of scanning the image being transmitted. They may have any value from almost zero to well over four million cycles. (Reference: VIDEO FREQUENCIES.)

VISUAL RADIO RANGE.

Radio range transmitter, the range course of which is followed by means of visual instruments.

VISUAL SIGNAL DEVICE.

Visual signal device, in protective signaling, is

a general term for pilot lights, annunciators, and other devices providing a visual indication of the condition supervised.

VISUAL TRANSMITTER.

Radio equipment for the transmission of the visual signals only.

VISUAL TRANSMITTER POWER.

Peak power output when transmitting a standard television signal.

VISUAL, BUSY.

Indicator that can be seen by the operator showing the circuit to be busy.

VISUAL-AURAL RADIO RANGE.

Radio range transmitter whose primary navigational course is followed by visual means and which is provided with aural sector identification.

VITA-RAYS.

Term sometimes applied to the range of ultraviolet rays from 2,900 to 3,200 angstrom units, which have a maximum physiological effect.

VITREOUS.

Having the nature of glass.

VIXON SI AND SII.

Airborne attenuator assemblies AN/APA-22 and AN/APA-26. These are auxiliary equipment designed to automatically reduce the power radiated by a 10-CM airborne radar system as it approaches an enemy target in order to keep the target unaware of the fact that it is being approached. Another model called the VIXON-X (AN/APA-31) is similar to the AN/APA-22 except that the AN/APA-31 is for use with 3-CM radar equipment.

VLA (VERY LOW ALTITUDE).**VLF (VERY-LOW FREQUENCY).**

1. Frequency band: 0.01 to 0.03 mc.
2. Wavelength: 10,000 to 30,000 meters.

VLR (VERY LONG RANGE).

Classification of ground radar sets by slant range. It is applied to equipment whose maximum range

on a reflecting target of one square meter normal to the signal path exceeds 800 miles, provided that line-of-sight exists between the target and the radar.

VOA (VOICE OF AMERICA).

VOCS (VIOLATION OF CRYPTOGRAPHIC SECURITY).

VODAS.

System for preventing the over all voice frequency singing of a two-way telephone circuit by disabling one direction of transmission at all times.

VODER.

Electronic device using vacuum tubes in connection with electrical filters controlled through a keyboard, capable of artificial production of voice sounds.

VOGAD.

Voice-operated device used to give a substantially constant volume output for a wide range of inputs.

VOICE CALL SIGN.

Call sign provided primarily for voice communication.

VOICE COIL.

Coil that is attached to the diaphragm of a dynamic loudspeaker and moves through the air gap between the pole pieces.

VOICE FREQUENCY.

Frequency lying within that part of the audio range which is employed for the transmission of speech. Voice frequencies used for commercial transmission of speech usually lie within the range of 200 to 3500 cycles per second.

VOICE-FREQUENCY TELEPHONY.

Telephony in which the frequencies of the components of the transmitted electric waves are substantially the same as the frequencies of corresponding components of the actuating acoustical waves.

VOICE-FREQUENCY CARRIER TELEGRAPHY.

Telegraphy in which the carrier currents have frequencies such that the modulated currents may

be transmitted over a voice-frequency telephone channel.

VOICE-FREQUENCY TELEGRAPH SYSTEM.

Telegraph system permitting use of up to 18 channels on a single circuit. A different audio frequency generated by a tuning-fork-controlled, vacuum-tube oscillator is used for each channel, being keyed in the conventional manner. The various audio frequencies at the receiving end are separated by suitable filter circuits and fed to their respective receiving circuits.

VOICE-OPERATED DEVICE.

Device used on a telephone circuit, the object of which is to permit the presence of, or some quality of, the telephone currents to effect a desired control.

VOLATILE.

Term descriptive of a storage medium in which information cannot be retained without continuous power dissipation.

Note. Storage devices or systems employing non-volatile media may or may not retain information in the event of planned or accidental power removal.

VOLCAS (VOICE OPERATED LOSS CONTROL AND SUPPRESSOR).

Voice-operated device which limits the maximum volume of speech or music.

VOLSCAN.

Automatic tracking and computing system which provides automatic control and let-down of air traffic approaching an airport. With this system, automatic scheduling of aircraft to a landing system at 30 second intervals is feasible. It is designed to provide: Automatic computations of possible arrival time; assignment of a schedule time relative to other traffic in the area; automatic computation of a suitable detour to meet the schedule time with minimum fuel consumption; anticollision measures; and automatic calculation and either automatic or manual rescheduling to meet emergency landing requirements. Its range is equal to the range of the data collection device used (any radar, beacon, or IFF unit). Control at the rate of 120 aircraft per

hour has been achieved. It is now necessary to relay instructions by voice, although control by data link is possible. The nomenclature of the VOLSCAN equipment is AN/GSN-3. VOLSCAN is an automatic computation and control system and not radar. However, it does require the output from a surveillance radar for its operation. An AN/CPN/18 and AN/GPX/9 radar-IFF combination can be used. This equipment can be connected to VOLSCAN, reporting to it, periodically, the position of all aircraft in the area. VOLSCAN includes automatic tracking, while scanning channels called ANTRACS. At the control console, an ANTRAC is assigned to each returning plane. Functioning as an automatic plotter, the ANTRAC isolates the aircraft's blip, follows its path, and continuously reports its exact position to the VOLSCAN computer, called DATAC. A channel of this computer automatically selects a scheduled arrival time for the aircraft and calculates heading and altitude orders which will make good this schedule. Thus, DATAC is an automatic controller.

VOLT.

Unit of electromotive force or electrical pressure. One volt is the pressure required to send one ampere of current through a resistance of one ohm.

VOLT BOX.

Series of resistors so arranged that a definite fraction of a given voltage may be measured and the given voltage computed therefrom.

VOLT-AMPERE.

Unit of apparent power in an ac circuit containing reactance. Apparent power is equal to the voltage in volts multiplied by the current in amperes, without taking phase into consideration.

VOLT-OHM-MILLIAMMETER.

Single test instrument having a number of different ranges for measuring voltage, current, and resistance. (Reference: MULTIPLE-PURPOSE TESTER.)

VOLT-SECOND.

Practical unit of magnetic flux, equal to 10^8 maxwells. (Reference: WEBER.)

VOLTA EFFECT.

Difference of potential that exists when dissimilar metals are placed in contact.

VOLTA'S LAW.

Contact potential difference developed between two dissimilar conductors, when first placed in contact, is the same whether the contact is direct or through one or more intermediate conductors.

VOLTAGE.

1. Term used to signify electrical pressure. Voltage is a force which causes current to flow through an electrical conductor.
2. Voltage (of a circuit). The greatest effective difference of potential between any two conductors of the circuit concerned.

ACCELERATION. Voltage between the cathode and anode which determines the average velocity of the electrons in the beam. (Reference: BEAM VOLTAGE.)

FORWARD. Voltage of that polarity which produces the larger current.

INVERSE PEAK. Peak value of the instantaneous voltage across a rectifier tube during the half of the cycle that is not conducting.

LINE. Voltage level of the main power supply to the equipment.

PLATE. DC potential which is applied between the plate and cathode of a tube.

REFERENCE. AC line voltage which is used to determine the in-phase or 180° out-of-phase condition of the selsyn error voltage in order to permit directional discrimination.

RESIDUAL. Of an electric supply circuit, the vector sum of the voltages to ground of the several phase wires of the circuit.

REVERSE. Voltage of that polarity which produces the smaller current.

RIPPLE. Alternating component of a substantially unidirectional voltage.

VOLTAGE AMPLIFICATION.

Ratio of the signal voltage across a specified load impedance, of a transducer, to the signal voltage across its input.

VOLTAGE AMPLIFIER.

Amplifier designed primarily to increase the voltage of a signal.

VOLTAGE ATTENUATION.

Ratio of the signal voltage delivered to a specified load impedance in a transducer.

VOLTAGE CIRCUIT OF A METER.

Winding of the meter to which is applied the voltage of the circuit in which a given electrical quantity is to be registered, or a definite fraction of that voltage, or a voltage dependent upon it.

VOLTAGE CIRCUIT OF AN INSTRUMENT.

Conductor or winding of the instrument proper to which is applied the voltage of the circuit in which a given electrical quantity is to be measured, a definite fraction of that voltage, or a voltage dependent upon it.

VOLTAGE DIRECTIONAL RELAY.

Relay which functions in conformance with the direction of voltage.

VOLTAGE DIVIDER.

Resistor which is connected across the output of a power source with mechanical provisions for connecting the local load circuits in parallel across part or all of the resistor, thereby obtaining the desired voltage.

VOLTAGE DOUBLER.

Voltage multiplier which separately rectifies each half cycle of the applied alternating voltage and adds the two rectified voltages to produce a direct voltage, the amplitude of which is approximately twice the peak amplitude of the applied alternating voltage.

VOLTAGE DROP.

Difference in voltage between two points. It is the result of the loss of electrical pressure as a current flows through an impedance.

VOLTAGE FEED.

Excitation of a transmitting antenna by applying voltage at a point of maximum potential (at a voltage loop or antinode).

VOLTAGE GRADIENT.

Voltage per unit length along a resistor or other conductive path.

VOLTAGE LEVEL.

At any point in a transmission system, the ratio of the voltage existing at that point to an arbitrary value of voltage used as a reference. Specifically, in systems such as television systems, where wave shapes are not sinusoidal or symmetrical about a zero axis, and where the arithmetical sum of the maximum positive and negative excursions of the wave is important in system performance, the voltage level is the ratio of the peak-to-peak voltage existing at any point in a transmission system to an arbitrary peak-to-peak voltage used as a reference. This ratio is usually expressed in dbv, signifying decibels referred to one volt peak-to-peak.

VOLTAGE MULTIPLIER.

1. Rectifying circuit which produces a direct voltage whose amplitude is approximately equal to an integral multiple of the peak amplitude of the applied alternating voltage.
2. Series arrangement of capacitors charged by rapidly rotating brushes in sequence, giving a high direct voltage equal to the source voltage multiplied by the number of capacitors in series.
3. Precision resistor used in series with a voltmeter to extend its measuring range.

VOLTAGE NODE.

Point having zero voltage in a stationary wave system. A voltage node exists at the center of a half-wave antenna.

VOLTAGE PHASE-BALANCE PROTECTION.

Effect of a device operative on the voltage unbalance between the phases of a normally balanced polyphase system to cause and maintain the interruption of power in the circuit.

VOLTAGE RATING.

Maximum sustained voltage that can safely be applied to an electrical device without risking the possibility of electrical breakdown.

VOLTAGE RATING OF A FUSE.

RMS ac voltage or the dc voltage at which it is designed to operate.

VOLTAGE RATIO OF A TRANSFORMER.

Ratio of the RMS primary terminal voltage to the RMS secondary terminal voltage under specified conditions of load.

VOLTAGE REGULATING TRANSFORMER.

Saturated-core type of transformer which holds output voltage to within a few per cent (± 5 per cent) with input variations up to ± 20 per cent. Considerable harmonic distortion results unless extensive filters are employed.

VOLTAGE REGULATION.

Measure of the degree to which a power source maintains its output-voltage stability under varying load conditions.

VOLTAGE REGULATION OF A DC GENERATOR.

Final change in voltage with constant field rheostat setting when the specified load is reduced gradually to zero, expressed as a percent of rated load voltage the speed being kept constant.

Note. In practice, it is often desirable to specify the overall regulation of the generator and its driving machine, thus taking into account the speed regulation of the driving machine.

VOLTAGE REGULATION OF A SYNCHRONOUS GENERATOR.

Rise in voltage with constant field current when, with the synchronous generator operated at rated voltage and rated speed, the specified load at the specified power factor is reduced to zero, expressed as a percent of rated voltage.

VOLTAGE REGULATOR.

Device that functions to maintain the terminal voltage of a generator or other machine at a predetermined value or varies the voltage according to a predetermined plan.

VOLTAGE RELAY.

Relay that functions at a predetermined value of voltage.

VOLTAGE SATURATION.

Condition in which the plate current of a thermionic vacuum tube cannot be further increased by increasing the plate voltage. The electrons are then being drawn to the plate at the same rate as they are emitted from the cathode. (Reference: CURRENT SATURATION, PLATE SATURATION.)

VOLTAGE STANDING-WAVE RATIO.

Measured ratio of the field strength at a voltage minimum to that at an adjacent maximum.

VOLTAGE TO GROUND.

Voltage between any live conductor of a circuit and earth.

Note. Where safety considerations are involved, the voltage to ground for ungrounded circuits shall be taken as the highest voltage between the conductors of the circuit.

VOLTAGE TRANSFORMER.

Instrument transformer intended for measurement or control purposes, and designed to have its primary winding connected in parallel with the circuit whose voltage is to be measured or controlled.

VOLTAGE TYPE TELEMETER.

Telemeter which employs voltage as the translating means.

VOLTAGE-REGULATOR TUBE.

Two-electrode, gas-filled vacuum tube, sometimes used in radio receivers to keep the alternating input voltage to the receiver essentially constant despite wide variations in line voltage, or to maintain an essentially constant direct voltage in a circuit.

VOLTAIC CELL.

Early name for a primary cell.

VOLTAIC COUPLE.

Two dissimilar metals in contact, resulting in a contact potential difference.

VOLTAIC PILE.

Voltage source consisting of alternate pairs of dissimilar metal disks, with moistened pads between pairs, forming a number of elementary primary cells in series. Made by Volta in 1796.

VOLTAMMETER.

Electrical measurement device that contains an ac voltmeter and an ac ammeter. When connected in an electrical circuit, this instrument gives simultaneous readings of current and voltage.

VOLTMETER.

1. Instrument for measuring potential difference; may be calibrated in volts, microvolts, millivolts, or kilovolts.

2. Instrument for measuring voltage. Voltmeters are provided with a scale, graduated in volts, millivolts, or kilovolts.

VOLTMETER SENSITIVITY.

Ratio of the total resistance of the voltmeter to its fullscale reading in volts, expressed in ohms-per-volt.

VOLUME.

1. Expression is generally taken to be synonymous with power level.

2. Magnitude as measured on a standard volume indicator of a complex audio frequency wave, expressed in volume units (VU). In addition, the term volume is used loosely to signify either the intensity of a sound or the magnitude of an audio-frequency wave.

3. Amount or measure of energy in an electrical or acoustical train of waves.

VOLUME COMPRESSION.

Limitation of the volume range of a radio program to a variation of about 30 to 40 decibels at the transmitter, to permit using a higher average percentage modulation without risk of over-modulation.

VOLUME CONTROL.

Device for controlling volume.

VOLUME EQUIVALENT.

For a complete telephone connection (including

the terminating telephone sets), a measure of the loudness of speech reproduced over it. The volume equivalent of complete telephone connection is expressed numerically in terms of the trunk loss of a working reference system, when the latter is adjusted to give equal loudness.

Note. For engineering purposes, the volume equivalent is divided into volume losses assignable to (1) the station set, subscriber line, and battery supply circuit which are on the transmitting end; (2) the station set, subscriber line, and battery supply circuit which are on the receiving end; (3) the trunk; and, (4) interaction effects arising at the trunk terminals.

VOLUME EXPANDER.

Special audio-frequency circuit arrangement sometimes used to increase the volume range of a radio program or phonograph record by making weak sound weaker and loud sounds louder, thereby counteracting volume compression at the transmitter.

VOLUME EXPANSION.

Method of increasing the volume range of reproduced sounds to obtain greater naturalness and reduce background noise.

VOLUME INDICATOR.

Meter calibrated in volume units for measuring the energy of speech and music.

VOLUME LEVEL.

Same as speech level. Energy of speech (or music) measured on a volume indicator in volume units.

VOLUME LIMITER.

Voice-operated device which limits the maximum volume of speech or music.

VOLUME RANGE.

In a transmission system, the difference, expressed in db, between the maximum and minimum volumes that can be satisfactorily handled by the system. The volume range of a complex audio-frequency signal is the difference, expressed in db, between the maximum and minimum volumes occurring over a specified period of time.

VOLUME UNIT.

1. Unit of transmission measurement for measuring the level of non-steady-state currents. Zero level is the steady-state reference power of 1 milliwatt in a circuit of 600 ohms characteristic impedance.
2. Measure of the power level of the voice wave. Zero VU is equivalent to + 4 dbm for simple electrical waves (single frequencies).
3. Standardized unit for specifying the power of voice or music. Must be measured with instruments standardized for this purpose.

VOLUME-LIMITING AMPLIFIER.

Amplifier containing an automatic device which maintains the output volume substantially constant when the input volume exceeds a predetermined level.

VOLUME-UNIT INDICATOR.

Instrument calibrated to read audio-frequency power levels directly in volume units.

VOUCHER.

Authorized property accounting document which, when properly accomplished, must be filed for subsequent inspection or audit in order to reflect and support the receipt, shipment, issue, transfer, or disposition of property by a person required by regulations to maintain a formal or an informal record of such transactions.

VOM (VOLT-OHM MILLIAMMETER).**VOR (VHF OMNIRANGE).**

Radio range operating in the VHF band which provides direct indication of the magnetic bearing (omni-bearing) of the range station from an aircraft. This information is available throughout 360 degrees. In other words, the range produces a course to the station for any aircraft within range, regardless of its azimuth position with reference to the station. This is in contrast to other types of radio ranges which produce a limited number of fixed courses.

VOR/DME.

Short range navigational system employing VHF omniranges and distance measuring equipment.

This system is widely employed on air routes in the ConUS. It has sometimes been referred to as the common system, or the navigational system for use by both civilian and military aircraft. Data provided by the omniranges and distance measuring equipment can be used in the aircraft to indicate position, or with a suitable computer, to indicate left-right steering and distance to go along a selected track.

VORTAG.

Nickname given Air Navigation Development Board's Advisory Committee Number 1, formed to study VOR/DME and TACAN relationship problems.

VOWEL ARTICULATION.

Articulation obtained by analysis of the sound articulation when the speech units considered are vowels.

VOWEL, CONSONANT, INITIAL CONSONANT, OR FINAL CONSONANT ARTICULATION.

Sound articulation analyzed to show the percentage correctly recognized of the total number of vowels, consonants, initial consonants, or final consonants which were used in the articulation tests.

VR (VOLUMETRIC RADAR).

Radar capable of producing three dimensional position data on a multiplicity of targets.

Note. This definition includes, but is not limited to, volumetric scan.

VR TUBE.

Gas-filled electronic tube which has the property of maintaining a nearly constant voltage across its terminals over a considerable range of current through the tube. Used in electronic voltage regulators.

VREELAND OSCILLATOR.

Device for producing a sinusoidal current by means of a mercury arc in periodically varying field.

VSR (VERY SHORT RANGE).

Classification of ground radar sets by slant range. It is applied to equipment whose maximum range

on a reflecting target of one square meter normal to the signal path is less than 50 miles provided that line-of-sight exists between the target and the radar. (Reference: VERY-LONG RANGE, LONG RANGE, MEDIUM RANGE, SHORT RANGE.)

VSWR (VOLTAGE STANDING-WAVE RATIO).

Measured ratio of the field strength at a voltage minimum to that at an adjacent maximum.

VI (VOICE-FREQUENCY CARRIER TELEGRAPH CHANNEL).

VTUM (VACUUM-TUBE VOLTMETER).

Device utilizing the characteristics of a vacuum tube for measuring voltages.

VU (VOLUME UNIT).

VU METER.

Volume indicator in accordance with American

Standards Association C 16.5—1942. It has a db scale and specified dynamic and other characteristics to obtain correlated readings of speech power necessitated by the rapid fluctuations in level of voice currents.

VULTURE.

Overland range-only radar, AN/APC-13B. It is a 12-CM airborne fire-control set for use against land targets or uniloated waterborne targets. Range data is fed manually into the sights of fixed forward-firing 75-mm cannon and 50-caliber machine guns. The altitude of the aircraft is then adjusted for proper firing. This set is also known as the overland falcon and is similar to the Falcon (AN/APG-13 and AN/APG-13A) except that it employs an offset rotating paraboloid antenna instead of an end-fire array, and also uses a special B-type presentation. Another set, the AN/APG-21, is known as the automatic vulture and also PIERODACTYL.

W

W (WITHOUT VOICE FACILITIES).**W (WEST).**

Nations of Western Europe and America, especially the NATO nations.

WAC (WORLD AERONAUTICAL CHART).

One of a series of aeronautical charts covering the entire world, designed for use in landmark navigation, radio navigation, dead reckoning, and celestial navigation.

WAC (WOMEN'S ARMY CORPS).

Army Corps, the members of which are the women of the Army except for women nurses and for members of the Army Medical Specialists Corps.

WAD (WEAPONS ASSIGNMENT DISPLAY).

In air defense, a situation display used to assist certain personnel in making decisions relative to weapons commitment. It contains target track and air bases, and the time-to-go from these bases, to interception.

WADC (WRIGHT AIR DEVELOPMENT CENTER).

Air development center at Wright-Patterson Air Force Base, Ohio.

WADF (WESTERN AIR DEFENSE FORCE).

Major component of the air defense command, providing air defense for Western US.

WAF (WOMEN IN THE AIR FORCE).

Corps of enlisted, warrant, and commissioned women in the Air Force, including all women except those of the Nurses' Corps and of the USAF Medical Specialists Corps.

WAFER SLICING.

Process in which wafers in the approximate BT or other desired orientation are cut directly from the mother crystal. (Reference: BALONEY SLICING.)

WAFER SOCKET.

Vacuum-tube socket that consists of two punched sheets or wafers of an insulating material, be-

tween which are spring metal clips that grip the terminal pins of a tube inserted in the socket.

WAGNER GROUND.

Bridge using an additional pair of ratio arms. The ground connection to the bridge is moved to a position on these arms to effect a perfect balance, free from error.

WAGON WHEELS.

Mobile tactical air communications central, AN/MS-4. It is air transportable and provides telephone, facsimile, and radio and wire teletype facilities. This equipment is intended to satisfy the administrative and operational needs of a numbered tactical air force. It is used as a terminal for all communications between a tactical air force headquarters, rear, lateral, and subordinate elements. The complete equipment consists of: One trailer-mounted electronic shop (AN/MSM-6), one manual telephone central office (AN/MTC-2); one radio teletypewriter set (AN/MCS-22), one communications operations center (AN/MS-21); two telegraph-telephone terminal centers (AN/MS-20); one message center (AN/MS-19); one message center (AN/MS-18); and, two teletypewriter central offices (AN/MGC-13).

WALKIE-TALKIE.

Compact, portable, combination radio transmitter and receiver that can be carried by one man, strapped over the back, and used for communication over medium distances.

WALL OUTLET.

Spring-contact device installed at an outlet and connected permanently to the power-line wiring of a building. It permits connection of a portable lamp or appliance to the power line by means of a plug and flexible cord. (Reference: CONVENIENCE RECEPTACLE, RECEPTACLE.)

WALL TELEPHONE SET.

Telephone set arranged for wall mounting.

WALLS.

Sides of a phonograph groove.

WAMCATS (WASHINGTON-ALASKA MILITARY CABLE AND TELEGRAPH SYSTEM).

WARNING LIGHT.

Computer-operated lights on consoles; under prescribed conditions, these lights alert personnel to specific situations.

WARNING ORDER.

Preliminary notice of an order or an action which is to follow. It is designed to give subordinates time to make necessary plans and preparations.

WARNING-POINT LEVEL.

Term applied by zonal master and specialized supply depots to denote the stock balance point at which action must be taken to replenish the stock.

WATCH.

Service performed by a qualified operator when on duty in the radio room of a vessel listening for signals of other stations on the international calling and distress frequency.

WATCHMAN'S REPORTING SYSTEM.

Supervisory system arranged for the transmission of a patrolling watchman's regularly recurrent report signals to a central supervisory agency from stations along his patrol route.

WATER-COOLED TUBE.

Vacuum tube having an anode structure projecting through the glass envelope and constructed so as to permit circulation of water around the anode for cooling purposes during operation.

WATERTIGHT.

Provided with an enclosing case which will exclude water applied in the form of a hose stream for a specified time.

WATERTIGHT MACHINE.

Totally enclosed machine, constructed so that it will exclude water applied in the form of a stream from a hose.

WATT.

Practical unit of electric power. In a dc circuit, the power in watts is equal to volts multiplied by amperes. In an ac circuit, the true power in watts is effective volts multiplied by the circuit power factor. There are 746 watts in 1 horsepower.

WATT-HOUR.

Unit of electrical energy, equal to a power of one watt being absorbed continuously for one hour.

WATT-HOUR CAPACITY.

Number of watt-hours which can be delivered from a storage battery under specified conditions as to temperature, rate of discharge, and final voltage.

WATT-HOUR METER.

Electricity meter that measures and registers electric energy in watt-hours or kilowatt-hours.

WATT-SECOND.

Amount of energy corresponding to one watt acting for one second. One watt-second is equal to one joule.

WATTAGE RATING.

Rating expressing the maximum power that a device can safely handle. It is usually a conservative rating, and higher power can be safely handled for short periods of time under certain conditions.

WATTLess COMPONENT.

Reactive component.

WATTLess POWER.

Component of the apparent power in an ac circuit which is delivered to the circuit during part of a cycle, but is returned to the source during another part of the cycle. The practical unit of wattless power or reactive power is the var, equal to one reactive volt ampere. (Reference: REACTIVE VOLT-AMPERES.)

WATTMETER.

Instrument for measuring electric power. Wattmeters are provided with a scale, usually graduated in watts or kilowatts.

WAVE.

Propagated disturbance, usually periodic such as a radio wave or sound wave. If the periodic motion is regular and recurring, the wave is said to be periodic; if not recurring, it is said to be aperiodic or damped.

AMPLITUDE-MODULATED. Constant-frequency wave form varying in amplitude in accordance with the frequency of an impressed signal.

ATMOSPHERIC RADIO. Radio wave that is propagated by reflection in the atmosphere. It may include either the ionospheric wave, the tropospheric wave, or both.

CIRCULARLY POLARIZED. Elliptically polarized wave in which the ellipse is a circle in a plane perpendicular to the direction of propagation.

CONTINUOUS. Waves in which successive cycles have constant amplitude and are otherwise identical under steady-state conditions.

CYLINDRICAL. Wave whose equiphase surfaces form a family of coaxial cylinders.

DAMPED. Waves that progressively decrease in amplitude during successive cycles.

DIFFRACTED. When a wave in a medium of certain propagation characteristics is incident upon a discontinuity or a second medium, the diffracted wave is the wave component that results in the first medium, in addition to the incident wave and the waves corresponding to the reflected rays of geometrical optics.

DIRECT. Wave that is propagated directly through space.

ELECTROMAGNETIC. Transverse wave associated with the transmission of electromagnetic energy.

ELLIPTICALLY POLARIZED. Wave for which the electric-intensity vector at a point describes an ellipse.

EXTRAORDINARY. Magneto-ionic wave component which, when viewed below the ionosphere in the direction of propagation, has clockwise or counterclockwise elliptical polarization, respectively, according to whether the earth's magnetic field has a positive or negative component in the same direction.

GROUND. Radio wave that is propagated along the earth except ionospheric and tropospheric waves. The ground wave is refracted because of variations of the dielectric constant of the troposphere including the condition known as a surface duct.

GROUND-REFLECTED. Component of the ground wave that is reflected from the ground.

GUIDED. Wave whose energy is concentrated within or near boundaries between materials of different properties and which is propagated along the path so defined.

HEAT. Infrared radiation; similar to radio waves, but of higher frequency.

HORIZONTALLY POLARIZED. Linearly polarized wave whose direction of polarization is horizontal.

INCIDENT. Wave, traveling through a medium, which impinges on a discontinuity, or a medium of different propagation characteristics.

INTERRUPTED CONTINUOUS. Continuous waves that are interrupted at a constant audio-frequency rate.

IONOSPHERIC. Radio wave that is propagated by reflection from the ionosphere. (Reference: SKY WAVE.)

LINEARLY POLARIZED. 1. Point in a homogeneous isotropic medium.

2. Linearly polarized, electromagnetic wave (a wave whose electric intensity at all times lies along a fixed line).

MARKING.
(Reference: PULSE, MARKING.)

MODULATED. Characteristic of a wave which varies in accordance with the value of a modulating wave.

MODULATED CONTINUOUS. Wave in which the carrier is modulated by a constant, audio frequency tone. In telegraphic service, it is understood that the carrier is keyed.

- MODULATING.** Wave which causes a variation of some characteristics of a carrier.
- ORDINARY.** Magneto-ionic wave component which, when viewed below the ionosphere in the direction of propagation, has counter-clockwise or clockwise elliptical polarization, respectively, according to whether the earth's magnetic field has a positive or negative component in the same direction.
- PLANE-POLARIZED.** Plane-polarized, electromagnetic wave, at a point in a homogeneous isotropic medium, is a wave whose electric intensity at all times lies in a fixed plane which contains the direction of propagation.
- PLANE.** Wave whose equiphase surfaces form a family of parallel planes.
- POLARIZED.** Wave in which the electric lines are parallel. If the electric field is vertical, the waves are known as vertically polarized; if horizontal, horizontally polarized.
- RADIO.** Electromagnetic waves of frequencies between 10 KC and 3,000,000 MC.
- RECTANGULAR.** Periodic wave which alternately assumes one of two fixed values, the time of transition being negligible in comparison with the duration of each fixed value.
- REFLECTED.** When a wave in one medium is incident upon discontinuity or a different medium, the reflected wave is the wave component that results in the first medium in addition to the incident wave.
- REFRACTED.** Part of an incident wave which travels from one medium into a second medium. (Reference: TRANSMITTED WAVE.)
- SAWTOOTH.** Periodic wave whose amplitude varies, substantially linearly with time, between two values, the interval required for one direction of progress being longer than that for the other.
- SHEAR.** Wave, in an elastic medium, which causes an element of the medium to change its shape without a change of volume.
- SHORT.** Refers to radio frequencies above the commercial broadcasting band used for sky-wave communication. Range is from 1.5 to 300 megacycles.
- SIGNAL.** Characteristics which permit some intelligence or message to be conveyed.
- SINE.** Instantaneous value of a wave, which is the maximum value multiplied by the sine of the electrical angle through which the wave has progressed.
- SKY.** Radio wave which reaches the receiving location after being refracted by the ionosphere.
- SPACE.** Radiated energy consisting of the direct and ground waves.
- SPHERICAL.** Wave whose equiphase surfaces form a family of concentric spheres.
- SQUARE.** Periodic wave which alternately, for equal lengths of time, assumes one of two fixed values, the time of transition being negligible in comparison.
- STANDING.** Sinusoidal distribution of current and voltage amplitudes along a transmission line as a result of the reflection of energy from a point where a mismatch of impedances occurs.
- tone-MODULATED.** Obtained from continuous waves by amplitude-modulating them at audio frequency in a substantially periodic manner.
- TRANSVERSE ELECTRIC.** Electromagnetic wave in which the electric intensity is everywhere perpendicular to the direction of propagation.
- TRANSVERSE ELECTROMAGNETIC.** Electromagnetic wave in which both the electric and magnetic intensities are everywhere perpendicular to the direction of propagation.
- TRAVELING.** Wave that travels in one direction.
- TROPOSPHERIC.** Radio wave that is propagated by reflection from a place of abrupt

change in the dielectric constant or its gradient in the troposphere. In some cases, the ground wave may be so altered that new components appear to arise from reflections in regions of rapidly changing dielectric constant. When these components are distinguishable from the other components, they are called tropospheric waves.

UNIFORM PLANE. Plane wave in which the electric and magnetic intensities have constant amplitude over the equiphase surface. Such a wave can only be found in free space at an infinite distance from the source.

VERTICALLY POLARIZED. Linearly polarized wave whose direction of polarization is vertical.

WAVE ANGLE.

Angle of the line of propagation. It has two components, azimuth and elevation. The azimuth angle is measured about a vertical axis, clockwise from north. The elevation angle is measured about the horizontal axis to the direction of propagation, upward from horizontal.

WAVE ANTENNA.

Directional antenna, composed of a system of parallel, horizontal conductors from one-half to several wavelengths long and terminated to ground at the far end in its characteristic impedance. (Reference: BEVERAGE ANTENNA.)

WAVE ATTENUATION.

Decrease in amplitude, with distance in the direction of wave propagation.

WAVE BAND.

Band of frequencies, such as that assigned to a particular type of radio communication service.

WAVE CLUTTER.

Clutter in a radar set caused by echoes from waves of the sea.

WAVE CONVERTER.

Device for changing a wave of a given pattern into a wave of another pattern. Baffle-plate converters, grating converters, and sheath-resaping converters for waveguides are typical examples.

WAVE DUCT.

1. Waveguide, with tubular boundaries, capable of concentrating the propagation of waves within its boundaries.
2. Natural duct, formed in air by atmospheric conditions, through which waves of certain frequencies travel with more than average efficiency.

WAVE EQUATION.

Equation that gives a mathematical specification of a wave process, or describes the performance of a medium through which a wave is passing.

WAVE FILTER.

Transducer for separating waves on the basis of their frequency. It introduces relatively small insertion loss to waves in one or more frequency bands and relatively large insertion loss to waves of other frequencies.

WAVE FORM.

Shape of an electromagnetic wave, or its graphic representation, showing variation in amplitude with respect to time.

WAVE FRONT.

1. A continuous surface of a progressive wave in space, which is a focus of points having the same phase at a given instant.
2. That part (in time or distance) of a signal wave envelope, between the initial point of the envelope and the point at which the envelope reaches its crest.
3. Wave front of a wave in space is a continuous surface at every point of which the displacement from zero in the positive (or negative) direction has the same value at any instant. If the wave is periodic, the displacements of the points on a wave front are in the same phase. The wave front of a surface wave is a continuous line, the points of which have the same properties as those in the wave front of a wave in space.

WAVE FUNCTION.

Point function that, in a wave equation, specifies the amplitude of a wave.

WAVE IMPEDANCE.

Of a transmission line at any specified plane, the complex ratio at every point in that plane, of the transverse component of the electric field, to the transverse component of the magnetic field. Both incident and reflected waves may be present.

WAVE IN AN ELECTRIC CIRCUIT.

Variation of current and/or potential at any point in the electric circuit.

WAVE INTERFERENCE.

1. Process that makes it possible to reinforce radiation in a desired direction from an antenna array by suppressing radiation in undesired directions. A large number of sources of radiation are so positioned and excited that their resulting waves interfere with each other to produce the cancellation and reinforcement of waves required for the desired directional characteristics.

2. Term, in common usage, usually refers to the interference of waves of the same or nearly the same frequency.

WAVE MECHANICS.

General physical theory that assigns wave characteristics to the components of atomic structure and seeks to interpret all physical phenomena in terms of hypothetical wave forms. Introduced by Schroedinger in 1926.

WAVE METER.

1. Device which is calibrated to indicate the length in meters of the wave to which it is tuned. (Reference: ABSORPTION FREQUENCY METER.)

2. Frequency meter with a scale calibrated to measure wavelength.

WAVE NORMAL.

Direction normal to the wave front in the direction of propagation.

WAVE PROPAGATION.

Radiation, as from an antenna or RF energy, into space. (Reference: PROPAGATION.)

WAVE RECEPTION.

Means of converting a wave proceeding through a guide into useful form for amplification by a telephone or television amplifier or other electronic device. Examples are crystal detectors in detecting wire gratings, in quarter-wave terminations, in tuned resonating cavities, in disc-shaped or coaxial cavities, and in heterodyne detector arrangements.

WAVE SPACING.

(Reference: PULSE, SPACING.)

WAVE SHAPE.

Graph of the wave as a function of time or distance.

WAVE TAIL.

Part of a signal-wave envelope (in time or distance) between the steady state value (or crest) and the end of the envelope.

WAVE TILT.

Forward inclination of a radio wave due to its proximity to ground.

WAVE TRAIN.

Limited series of wave cycles caused by a periodic disturbance of short duration.

WAVE TRAP.

1. Device used to exclude unwanted radio signals or interference from a receiver. Wave traps are usually tunable to enable selection of the interfering signal which is to be rejected or to determine the true frequency of a received signal.

2. Resonant circuit connected into the antenna system of a radio receiver to suppress undesired signals at a particular frequency.

WAVEFORM.

Shape of the wave obtained when instantaneous values of an alternating current quantity are plotted against time in rectangular coordinates.

WAVEGUIDE.

1. Broadly, a system of material boundaries capable of guiding electromagnetic waves.

2. Specifically, a transmission line comprising

a hollow conducting tube within which electromagnetic waves may be propagated; or, a solid dielectric or dielectric filled conductor for the same purpose.

WAVEGUIDE CUTOFF FREQUENCY.

Frequency limit of propagation along a waveguide for waves of a given field configuration. (Reference: CRITICAL FREQUENCY.)

WAVEGUIDE ELBOW.

Bend in a waveguide.

WAVEGUIDE PLUNGER.

Movable, shorting plate, used to vary the length of a resonant section of waveguide.

WAVEGUIDE SHIM.

Thin resilient metal sheet inserted between waveguide components to insure electrical contact.

WAVEGUIDE SWITCH.

Transmission line switch for transferring a transmitter or receiver unit from one antenna to another or to a dummy load.

WAVELENGTH.

Wavelength is the distance travelled in one period or cycle by periodic disturbance. It is the distance between corresponding phases of two consecutive waves of a wave train. A wavelength is the quotient of velocity divided by frequency.

WAVELENGTH CONSTANT.

Imaginary part of the propagation constant. That part of the propagation constant that refers to the retardation in phase of an alternating current passing through a unit length of transmission line. (Reference: PHASE CONSTANT.)

WAVEMETER.

Device which is calibrated to indicate the length in meters of the wave to which it is tuned.

WAX ORIGINAL.

Original recording on a wax surface for the purpose of making a metal master.

WAY POINT.

Course-line point, the coordinates of which are

defined in relation to established radionavigation aids.

WAY STATION.

Teletypewriter connected to a line between, and in series with, other teletypewriter stations.

WB (WEATHER BUREAU).

Bureau in the Department of Commerce that collects reports on weather conditions for purposes of forecasting and keeping records.

WBBW (WIDE-BAND BANDWIDTH).**WD (WEAPONS DIRECTOR).**

Officer responsible, in a SAGE system, to the senior weapons director for assigning defensive weapons, ordering scrambles, and supervising intercept directors.

WDD (WESTERN DEVELOPMENT DIVISION).

Forerunner of Ballistic Missile Division (BMD).

WDT (WEAPONS DIRECTOR TECHNICIAN).

Noncommissioned officer who assists the weapons director in a SAGE center.

WEAK COUPLING.

Loose coupling in a radio-frequency transformer.

WEAPON SYSTEM.

Equipment, skills and techniques which together form an instrument of combat, which usually, but not always, has an air vehicle as its major operational element. A complete weapon system includes all related facilities, equipment, materials, services, and personnel required solely for operation of the major element so that, as an instrument of combat, it becomes a self-sufficient unit of striking power in its intended operational environment.

WEAPONS ASSIGNMENT.

Process by which weapons are assigned to individual directors for use in accomplishing an assigned mission in air defense operations.

WEAPONS ASSIGNMENT DISPLAY.

Situation display used to assist certain personnel in making decisions relative to weapons commitment in air defense operation. It contains target, track, air bases, and time-to-go from these bases to interception.

WEAPONS DIRECTOR.

Officer, in a SAGE center, responsible to the senior weapons director for assigning defensive weapons, ordering scrambles, and supervising intercept directors.

WEAPONS DIRECTOR TECHNICIAN.

Noncommissioned officer in a SAGE center who assists the weapons director.

WEATHER.

Information pertaining to weather conditions throughout the area of responsibility.

WEATHER CENTRAL.

Organization which collects, collates, evaluates, and disseminates meteorological information in such a manner that it becomes a principal source of such information for a given area.

WEATHER CODE.

Condensation codes for the transmission of weather information.

WEATHERPROOF.

1. Applied to conductor covering, made up of braids of fibrous material, which are thoroughly impregnated with a dense, moistureproof compound after they have been placed on the conductor; or, an equivalent protective covering designed to withstand weather conditions.
2. So constructed or protected that exposure to the weather will not interfere with its successful operation.

WEBER.

Practical unit of magnetic flux.

WEDGE.

1. Wedge-shaped area of high barometric pressure on a weather chart.
2. Prism of very small deviation.
3. Amplitude ratio between picture white and picture black. This ratio is usually expressed in decibels. (Reference: CONTRAST.)

WEHNELT CATHODE.

Hot cathode that consists of a metallic core, coated with alkaline-earth oxides. Widely used in radio vacuum tubes.

WEIGHTLESSNESS.

Condition of no gravitational pull, relative to surroundings; physiologically, the same as the sensation of continuous free fall.

WELD.

Localized consolidation of metals by a welding process.

WELDING TRANSFORMER.

Power transformer having a secondary winding consisting of only a few turns of very heavy wire, used to produce high-value, alternating currents at low voltages for welding purposes.

WERTHEIM EFFECT.

Change in the magnetization of a ferromagnetic wire or rod when twisted.

WEST (WEST, WESTERN, WEST COAST).

WESTERN UNION JOINT.

Joint or splice having good mechanical strength as well as good conductivity, made by crossing the cleaned ends of two wires, then winding the end of each wire around the other wire and soldering the joint.

WESTON NORMAL CELL.

Standard cell of the saturated cadmium type. The positive electrode is cadmium and the electrolyte is a saturated cadmium sulphate solution.

WET CELL.

Cell whose electrolyte is in liquid form and free to flow and move.

WET CONTACT.

Contact through which direct current flows.

WET ELECTROLYTIC CAPACITOR.

Electrolytic capacitor employing a liquid electrolyte.

WET FLASHOVER VOLTAGE.

Voltage at which the air surrounding a clean wet insulator shell completely breaks down between electrodes.

Note. The value will depend upon the conditions under which the test is made.

WG (WING).

A general term applied to the airfoil or one of the airfoils, designed to develop a major part of the lift of a heavier-than-air aircraft.

WHEATSTONE AUTOMATIC TELEGRAPHY.

Form of Morse telegraph in which telegraph signals are transmitted mechanically from a perforated tape and recorded automatically in dots and dashes on a tape.

WHEATSTONE BRIDGE.

Null-type resistance-measuring circuit in which resistance is measured by direct comparison with a standard resistance.

WHEATSTONE TAPE.

Tape used for automatic (machine) transmission and reception of International Morse Code.

1. For transmission. Tape providing for two-unit perforations: two holes perforated vertically equal a dot, and two holes perforated obliquely equal a dash.

2. Ink recording tape. Tape drawn through an ink recorder, the finger of which draws a continuous ink line; dots or dashes are indicated by fluctuations in the ink line.

WHEEL STATIC.

Interference encountered in autoradio installations due to friction between the tires and the street.

WHIP ANTENNA.

Type of antenna consisting of a flexible rod, supported at one end.

WHISKER.

Sharpened, metal wire in contact with the crystal in a crystal mixer.

WHITE.

Signal produced at any point in a facsimile system by the scanning of a selected area of subject copy having minimum density.

WHITE ALICE.

Initial implementation phase of a plan to expand communications facilities in Alaska. This plan

is intended to meet the AC&W communications requirements necessary for performing the Alaskan Air Defense mission, plus the communications requirements of other agencies and services in Alaska, including civilian. Requirements are determined by a joint Alaskan Communications Study Group with representatives from the Army, Navy, Alaskan Air Command, CAA, AACS, and the Alaskan Communications System. This group tabulated all communications requirements through 1960, evaluated existing systems, and provided criteria for future systems. An engineering study of the requirements and a plan for implementing them were made by the American Telephone and Telegraph Company. Because of the extensive nature of the communications requirements, it was necessary to establish an initial implementation phase which has been nicknamed white alice. This phase is the basic support system required to support the AC&W stations programmed for completion through 1956, and it is being implemented by the Air Force. However, it is anticipated that other military and civil agencies will participate in implementing the remaining phases of the overall communications plan. The Western Electric Company has contracted for engineering and installation of white alice facilities. Extensive use will be made of the communications technique known as ionospheric scatter or FPTS.

WHITE LIGHT.

Radiation producing the same color sensation as average noon sunlight.

WHITE SIGNAL.

Signal at any point in a facsimile system produced by the scanning of a minimum density area of the subject copy.

WHITE TRANSMISSION.

In an amplitude-modulation system, that form of transmission in which the maximum transmitted power corresponds to the minimum density of the subject copy. In a frequency-modulation system, that form of transmission in which the lowest transmitted frequency corresponds to the minimum density of the subject copy.

WHITE-TO-BLACK AMPLITUDE RANGE.

1. In a facsimile system employing positive amplitude modulation, the ratio of signal voltage (or current) for picture white to the signal voltage (or current) for picture black at any point in the system.
2. In a facsimile system employing negative amplitude modulation, the ratio of the signal voltage (or current) for picture black to the signal voltage (or current) for picture white. This ratio is often expressed in decibels.

WHITE-TO-BLACK FREQUENCY SWING.

In a facsimile system employing frequency modulation, the numerical difference between the signal frequencies corresponding to picture white and picture black at any point in the system.

WHR (WATT-HOUR).

Unit of electrical energy, equal to a power of one watt being absorbed continuously for one hour.

WIDE-BAND RATIO

Ratio of a system of the occupied frequency band to the intelligence bandwidth.

WIDE-OPEN.

Refers to the untuned characteristic or lack of frequency selectivity.

WIDTH CODING.

Modifying the duration of the pulses emitted from the transponder in accordance with a pre-arranged code for recognition in the display.

WIDTH CONTROL.

Control that adjusts the width of the pattern on the screen of a cathode-ray tube in a television receiver or oscilloscope.

WIEDEMANN EFFECT.

(Reference: WERTHEIM EFFECT.)

WIEN BRIDGE.

Network of resistors and capacitors which has voltage characteristics, with respect to frequency similar to those of a tuned, inductance-capacitance circuit.

WIEN BRIDGE OSCILLATOR.

Oscillator, whose frequency of oscillation is controlled by a Wien bridge.

WIEN DISPLACEMENT LAW.

Wavelength of the maximum radiation from a hot source is inversely proportional to the absolute temperature.

WILLIAMS-TUBE STORAGE.

Type of electrostatic storage.

WILSON CHAMBER.

(Reference: CLOUD CHAMBER.)

WIMSHURST MACHINE.

Most common type of static machine or electrostatic generator, consisting of two coaxial insulating disks rotating in opposite directions, and having sectors of tinfoil so arranged with respect to a connecting rod and collecting combs that static electricity is produced for charging Leyden jars or discharging across a gap.

WIND CHARGER.

Wind-driven, dc generator used for charging batteries, such as for charging 32-volt, farm lightning-plant batteries.

WIND-DRIVEN GENERATOR FOR AIRCRAFT.

Generator used on aircraft which derives its power from the air stream applied on its own air screw or propeller during flight.

WINDER RANGE.

Movable, calibrated unit of the receiving mechanism of a teletypewriter by means of which the selecting mechanism may be moved with respect to the start signal.

WINDING.

One or more turns of wire forming a continuous coil for a transformer, rotating machine or other device.

FEEDBACK. Control winding, of a saturable reactor, to which a feedback connection is made.

OUTPUT. Winding, of a saturable reactor, other than a feedback winding, associated with the load and through which power is delivered to the load.

POWER. Winding, of a saturable reactor to which is supplied the power to be controlled. Commonly, the functions of the output and power windings are accomplished by the same winding, which is then termed the output winding.

SIGNAL. Control winding of a saturable reactor to which the independent variable (signal wave) is applied.

WINDING SHIELD.

Shield secured to the frame and adapted to protect the windings, but not to support the bearing.

WINDOW.

Strips of frequency-cut, metal foil, wire, or bars usually dropped from aircraft or expelled from shells or rockets as a radar countermeasure. (Reference: CONFUSION REFLECTOR.)

WINDOW BURSTS.

Dispensing of a number of window units in a short space of time, carried out at intervals.

WINDOW CORRIDOR.

Area in which window has been sown, sometimes known as the infected area or lane.

WINDOW DIMENSIONS.

1. Length in meters and centimeters, the width and thickness in millimeters, of a window.
2. Length in inches and fractions, width in fractions, and thickness in decimal fractions of an inch, of a window.

WINDOW JAMMING.

Reradiation of electromagnetic energy by reflection from window to impair the use of enemy electronic devices.

WINDOW ROCKET.

Special type of rocket filled with window.

WING.

1. In Air Force usage, an air unit composed normally of one primary mission group and the necessary supporting organizations, such as organizations designed to render supply, maintenance, hospitalization, and other services required by the primary mission groups. Primary

mission groups may be functional, such as combat, training, transport, or service.

2. In naval usage, a Fleet Air Wing is the basic organizational and administrative unit for naval-land and tender-based aviation. Such wings are mobile units to which are assigned aircraft squadrons and tenders for administrative control.

3. In Marine Corps usage, a balanced marine task organization of aircraft squadrons together with appropriate command, air control, administrative, service, and maintenance units. A standard marine aircraft wing contains the aviation elements normally required for the air support of a marine division.

4. Flank unit; that part of a military force to the right or left of the main body.

WING PANEL.

Panel containing intervention switches and warning lights; such a panel may be added to either or both sides of a situation-display or auxiliary console.

WING SPOT GENERATOR.

Electronic circuit that grows wings on the video target signal of a type G indicator. These wings are inversely proportional in size to the range.

WIPER.

Moving part of a switch, which rubs on and makes contact with a terminal.

WIRE.

Solid or stranded group of solid, cylindrical conductors having low resistance to current flow, with any associated insulation.

BRIDLING. Heavily insulated wire for connecting open wires together or to cable terminals.

COPPER-CLAD. Steel wire, tightly coated with copper.

DROP. Paired, insulated wire, running from a pole to a subscriber's station.

DUPLEX. Pair of parallel wires under one general insulation.

FIELD. Flexible, insulated wire, used in field telephone and field telegraph systems.

FLAMEPROOF. Wire with insulation that has been chemically treated to reduce the hazard of its catching on fire.

FUSIBLE. Wire made of low-melting-point metal or alloy used in fire alarm circuits.

GROUND. Conductor leading to an electric connection with the ground or to a ground terminal.

INTERIOR. Wire used inside buildings for connecting subscriber's equipment.

JUMPER. Wire used for cross connections on distributing frames and in terminals.

LASHING. 1. Wire for spiral-wrapping a cable to its suspension strand.

2. Lead-coated, bronze wire used for tying cable in position.

LECHER. Open, parallel transmission line commonly used in high-frequency measurements.

LINE. Bare wire for suspension in open lines on glass insulators.

OPEN. Term for bare line wires suspended on glass insulators.

ORDER. Auxiliary circuit for use in the line-up and maintenance of communication facilities. Properly called order circuit. (Reference: ENGINEERING CIRCUIT.)

SHIELDED. Wire, covered with insulation, which is covered in turn by a grounded screen to reduce electrical interference.

SIGNAL. Wire or leg associated with a circuit used only for passing signals.

SLEEVE. 1. Third conductor when associated with a pair.

2. Wire which connects to the sleeve of a plug or jack.

STEEL. High-strength wire used as a line conductor for long spans.

SUPERVISOR'S. Brief transmission between supervisors.

THIRD. 1. Third conductor when associated with a pair.

2. Wire which connects to the sleeve of a plug or jack.

TREE. Wire, heavily insulated and protected to resist abrasion from trees.

WIRE BONDING.

Lead-covered tie used to connect two cable sheaths until a splice is permanently closed and covered.

WIRE CHIEF.

Noncommissioned officer in charge of the installation, operation, and maintenance of short locals, switchboards, and auxiliary equipment.

WIRE COMMUNICATION.

Transmission of writing, signs, signals, pictures, and sounds of all kinds by aid of wire, cable, or other similar connection, between the point of origin and reception of such transmission.

WIRE GAUGE.

System of numerical designations of wire sizes, starting with low numbers for the larger sizes. The American Wire Gauge (AWG), formerly the Brown and Sharpe (B&S) Gauge, starts with 0000 as the largest size, going to 000, 00, 1, 2, and 40 and beyond for the smallest sizes.

WIRE GRATING.

Arrangement of wires set into a waveguide to pass one or more desired waves while obstructing all other waves.

WIRE LINES.

Consists of one or more wire circuits along the same route.

WIRE NET.

Planned arrangement of wire conductors over which stations or headquarters of a unit can communicate with each other.

WIRE PIKE.

Long pole which is used for removing field wire from roads and placing it over obstructions.

WIRE RECORDER.

Method of recording music or words from the air or from a microphone by moving a long, thin wire across the pole of a magnet. When the wire is rerun across the magnet, the record is reproduced by the loudspeaker.

WIRE SPLICE.

Electrically sound and mechanically strong junction of two or more conductors.

WIRE TELEPHONY.

Transmission of voice-frequency waves over wires, either directly as in voice-frequency telephony, or as the modulating wave in carrier telephony.

WIRE-MILE.

Unit of measure of the length of two-conductor wire between two points. The length of the route multiplied by the number of circuits gives the number of wire-miles.

WIRE-WOUND RESISTOR.

Resistor utilizing, as the resistance element, a length of high-resistance wire or ribbon wound on an insulating form.

WIRED RADIO.

Art of communication by means of radio waves guided intentionally by conductors.

WIRELESS.

British term for radio. Used in the United States when the word radio might be misinterpreted, as in the term wireless record player.

WIRELESS DEVICE.

Apparatus that generates a radio-frequency electromagnetic field, functionally utilized to operate associated apparatus not physically connected thereto, and at a distance in feet not greater than 157,000 divided by the frequency in kilocycles. The apparatus must be operated with the minimum power possible to accomplish the desired purpose, and its total electromagnetic field

produced at the maximum operating distance cannot legally exceed 15 microvolts per meter.

WIREFOTO.

1. Transmission of photographs or other single images over a telegraph system by scanning the picture into elemental areas in orderly sequence, converting each area into a proportional electric signal transmitting the signals in sequence, and reassembling them in correct order at the receiver. (Reference: FACSIMILE, PHOTOTELEGRAPHY.)

2. Facsimile photograph transmitted.

3. Equipment used for transmission of news-photos on a wire line circuit. Registered trademark of the Associated Press.

WIRING DIAGRAM.

Drawing that shows electrical equipments and/or component parts together with all the wiring that interconnects these equipments and/or parts.

WNG (WARNING).

Act or fact of giving notice of the approach of hostile or unidentified aircraft, especially by means of an established aircraft warning service.

WOBBULATOR.

Signal generator, the frequency of which is automatically varied periodically over a definite range; used, together with a cathode-ray tube, in testing circuit frequency response. In one form, it is a motor-driven variable capacitor used to vary the output frequency of a signal generator periodically between two limits for certain types of tests of radio equipment, such as frequency-response tests.

WOLLASTON WIRE.

Extremely fine wire made by coating fine platinum wire with silver, drawing it down further, then dissolving off the silver.

WOMP.

Sudden surge in signal strength resulting in a flare-up of light in the television picture.

WOODEN BLOCK.

Piece of wood simulating carbon blocks used in lightning arresters to keep the springs from grounding when protection is not required.

WOOFER.

Large loudspeaker designed to reproduce low audio frequencies at relatively high power levels. Usually used in combination with an HF loudspeaker called a tweeter.

WORD.

1. Ordered set of characters which is the normal unit in which information may be stored, transmitted, or operated upon within a computer.
2. Group of bits which occupies one storage address and is treated by the computer as a unit.

WORD CODE.

Word, which conveys a meaning other than its conventional one, prearranged by the correspondence.

WORD TIME.

Synonym for minor cycle.

WORDS PER MINUTE.

Used to express the number of times the test word "paris" or groups of characters having equivalent unit-length content, followed by an interword space, is transmitted per minute. Used in radiotelegraphy.

WOW.

Term often used to denote a change in pitch observable during reproduction of a recording, due to a low-frequency variation in the speed of either the recording or reproducing turntable.

WPM (WORDS PER MINUTE).

WPN (WEAPON).

1. Instrument of combat, either offensive or defensive, used to destroy, injure, defeat, or threaten an enemy.
2. By extension, any device, method, or circumstance that can be used either directly or indirectly to destroy, injure, or defeat an enemy.

WRINKLE FINISH.

Lacquer or varnish finish that may be applied with a brush or spray, and dries with an attractive, wrinkled surface. Used on panels and cabinets of radio and other electronic equipment.

WRITE.

To introduce information, usually into some form of storage. (Reference: READ.)

WRITING TELEGRAPH SYSTEM.

System of telegraphy in which the receiving equipment writes the message automatically in characters resembling handwriting.

WX (WEATHER).

Information pertaining to weather conditions throughout the area of responsibility.

WORK.

Mechanical work which is done by a force acting on a body is the scalar product of the force by the linear distance through which the point of application moves.

WORK FUNCTION.

General term applied to the energy required to transfer electrons or other particles from the interior of one medium across a boundary into an adjacent medium. The photoelectric work function applies to the transfer of electrons from a metal to a vacuum under the action of light, while the thermionic work function covers the same transfer under the influence of heat.

WORKING VOLTAGE.

Voltage rating. In an electrolytic capacitor, it is the highest voltage that can be applied continuously with safety.

WOUND-ROTOR INDUCTION MOTOR.

Induction motor in which the secondary circuit consists of a polyphase winding or coils, the terminals of which are connected to slip rings.

WRAMA (WARNER-ROBINS AIR MATERIEL AREA).

Air Material Area with headquarters at Robins Air Force Base, near Macon, Georgia.

W/T (WIRELESS, TELEGRAPHY).

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AFM 100-39
WW

WW (WIRE WOUND).

WXD.

ITU designation for meteorological radar sta-

tion.

WXR.

ITU designation for radiosonde station.

X

X

X.

Letter X may be used in lieu of punctuation whenever it is not considered essential, but some separation in the text is necessary for clarity and the use of X is not ambiguous. The written phonetic equivalent of the letter X will not be used for this purpose.

X.

Symbol for reactance.

X-AXIS.

Reference axis in a quartz crystal.

X-BAR.

Rectangular crystal bar, usually cut from a Z-section, elongated parallel to X, and with its edges parallel to X, Y, and Z.

X-CUT CRYSTAL.

Crystal cut so that its major, flat surfaces are perpendicular to an electrical (X) axis of the original quartz crystal.

X-PARTICLE.

Particle having the same negative charge as an electron, but a mass intermediate between that of the electron and the proton. Produced by cosmic radiation impinging on gas molecules, or actually forming a part of cosmic rays.

X-RADIATION.

X-ray radiation.

X-RAY.

Penetrating, electromagnetic radiation similar to light, but of much shorter wavelength (from about 10^{-7} to 10^{-10} centimeters).

X-RAY APPARATUS.

X-ray tube and its accompanying accessories, including the X-ray machine.

X-RAY CRYSTALLOGRAPHY.

Study of the arrangement of the atoms in a crystal by the use of X-rays.

X-RAY DIFFRACTION CAMERA.

Apparatus for directing a beam of X-rays into a sample of an unknown material and allowing

the resulting diffracted rays to act on a strip of film.

X-RAY DIFFRACTION PATTERN.

Pattern produced on film exposed in an X-ray diffraction camera, consisting of portions of circles having various spacings depending upon the material being examined.

X-RAY GONIOMETER.

Instrument used to determine accurately the position of the electrical axes of a quartz crystal. X-rays are reflected from the atomic planes of the crystal.

X-RAY SPECTROMETER.

Instrument for producing an X-ray spectrum and measuring the wavelengths of its components.

X-RAY SPECTRUM.

Orderly arrangement of a beam of X-rays according to wavelength.

X-RAY TUBE.

Vacuum tube designed for producing X-rays.

X-RAY VACUUM.

Gas pressure below 0.01 millimeter.

X-TIME.

Time remaining before the launching of a missile, according to a schedule established by launch control personnel. (Reference: T-TIME.)

X-WAVE.

One of the two components into which a radio wave is divided in the ionosphere by the magnetic field of the earth. The other component is the ordinary wave, or O-wave.

XC.

Symbol for capacitive-reactance.

XEROGRAPHIC RECORDING.

Type of recording in which the marking on the record sheet is produced by the discharge of local surface potential due to the exposure to light, the sheet then being dusted with suitable powder and fused.

X_L.

Symbol for inductive-reactance.

XMFR (TRANSFORMER).

XMIR (TRANSMITTER).

XMIT (TRANSMIT).

XMSSN (TRANSMISSION).

XTAL (CRYSTAL).

XY RECORDER.

Recorder that traces, on a chart, the relation of two variables, neither of which is time. Sometimes, the chart is moved in proportion to time, and one of the variables is controlled in such a

way that it increases in proportion to time. In a multiple XY recorder using electronic circuits, frequency deviation and activity are plotted against temperature for quartz crystals.

XY SWITCH.

Remotely controlled bank and wiper switch arranged in a flat manner, in which the wipers are moved in a horizontal plane, first in one direction and then in another.

XY-CUT CRYSTAL.

Crystal, cut so that its characteristics are between those of the X-cut and the Y-cut crystals.

Y

Y

Y.

Precedence prosign for emergency message.

Y SIGNAL.

Luminance transmission primary, 1.5-4.2 MC wide, which is equivalent to a monochrome signal. For color pictures, it contributes finest details and brightness information. Color television terminology.

Y-AXIS.

Line perpendicular to two opposite, parallel faces of a quartz crystal.

Y-BAR.

Bar cut in Z-sections with its long direction parallel to Y.

Y-CONNECTED CIRCUIT.

Star-connected, three-phase circuit.

Y-CUT CRYSTAL.

Crystal which is cut in such a way that its major,

flat surfaces are perpendicular to a mechanical (Y) axis of the original quartz crystal.

YAGI ANTENNA.

Type of directional antenna array, usually consisting of one driven one-half wavelength dipole section, one parasitically exciter reflector, and several parasitically excited directors.

YOKE.

1. Piece of ferro-magnetic material without windings, which permanently connects two or more magnet cores.

2. Coil assembly which is used to produce electromagnetic deflection of the electron beam in a cathode-ray tube.

YOUNG'S MODULUS.

Constant, which expresses the ratio of unit stress to unit deformation for all values within the proportional limit of the material.

YR (YEAR).

Z

Z (ZONE).

1. One of the two geographical areas into which the ConUS has been divided under the two-zone system of supply and maintenance.
2. Any place that is more or less marked off and distinguished from its surroundings by virtue of some particular use or function.

Z.

VHF station location marker at a range station.

Z.

Precedence prosign for a flash message.

Z (SYMBOL FOR IMPEDANCE).**Z₀ (CHARACTERISTIC IMPEDANCE).**

Ratio of the voltage to the current at every point along a transmission line on which there are no standing waves.

Z MARKER BEACON.

Equipment identical with the fan marker, except that it is installed as part of a four-course, radio range station at the intersection of the four range legs and radiates vertically to indicate to aircraft when they pass directly over the range station. It is usually not keyed for identification.

Z-AXIS.

Attempt to show a third dimension on the two-dimensional screen surface of a cathode-ray tube by applying the third variable to the control grid of the tube, this variable showing up as a change in intensity.

Z-BAR.

Rectangular bar, usually cut from X-sections, elongated parallel to Z.

ZEBRA TIME.

Alphabetic expression indicating Greenwich Mean Time.

ZEEMAN EFFECT.

Increase in the number of spectrum lines produced by a light source, when in a strong, magnetic field.

ZEPP-FED ANTENNA.

Antenna that is some multiple of a half-wavelength long and is fed at one end by one lead of a two-wire transmission line that is also some multiple of a half-wavelength long.

ZERO ADJUSTER.

Device for bringing the pointer of the electrical instrument to zero when the electrical quantity is zero.

ZERO BEAT.

Condition where two frequencies which are being mixed are exactly the same, and therefore produce no beat note.

ZERO BIAS.

1. Condition in which there is no potential difference between the control grid and the cathode.
2. When the received teletypewriter signal is equal to the transmitted signal (neither longer nor shorter), the circuit is said to have zero bias.

ZERO ERROR.

Delay time occurring within the transmitter and receiver circuits of a radar system. For accurate range data, this delay time must be compensated for in the calibration of the range unit.

ZERO GRAVITY.

(Reference: WEIGHTLESSNESS.)

ZERO LEVEL.

Reference level used for comparing sound or signal intensities. In audio-frequency work, a power of 0.006 watt is generally used as zero level. In sound, the threshold of hearing is generally assumed as the zero level.

ZERO METHOD.

Method of measurement in which the reading is taken after the circuit has been balanced to bring the pointer of the indicating instrument to zero, as in a Wheatstone bridge or in a laboratory balance for weighing purposes. (Reference: BALANCE METHOD, NULL METHOD.)

ZERO PHASE-SEQUENCE RELAY.

Relay which functions in conformance with the zero phase-sequence component of the current, voltage, or power of the circuit.

ZERO POLE.

Reference point for an open-wire pole line; the dead-end pole at the origin of the line; the lowest-numbered pole.

ZERO POTENTIAL.

Expression usually applied to the potential of the earth, as a convenient reference for comparison.

ZERO SET.

Control for adjusting range counter to give correct range.

ZERO SUBCARRIER CHROMATICITY.

Chromaticity, in color television, which is intended to be displayed when the subcarrier amplitude is zero.

ZERO TIME REFERENCE.

Reference point in time from which the operations of the various radar circuits are measured.

ZERO TRANSMISSION-LEVEL REFERENCE POINT.

Arbitrarily chosen point in a circuit to which all relative transmission levels are referred. The transmission level at the transmitting switchboard is frequently taken as the zero transmission-level reference point. (Reference: RELATIVE TRANSMISSION LEVEL.)

ZERO-ANGLE CUT.

(Reference: X-CUT CRYSTAL.)

ZERO-BEAT RECEPTION.

System of radio reception for suppressed-carrier systems of radio telephony, in which the receiver generates a voltage having the original carrier frequency and combines it with the incoming signal. (Reference: HOMODYNE RECEPTION.)

ZERO-BIAS TUBE.

Vacuum tube which is so designed that it may be operated as a class B amplifier without applying a negative bias to its control grid.

ZERO-FIELD EMISSION.

Thermionic emission from a hot conductor which is surrounded by a region of uniform electric potential.

ZEROIZE.

Align cryptographic elements of a cipher machine to a fixed original position.

ZI (ZONE OF INTERIOR).

1. That part of a national territory held intact against the enemy, in which the main manpower, weapons, and equipment are generated for use of the armed forces.

2. By inference, the ConUS.

ZIGZAG REFLECTIONS.

Layer of the ionosphere, high-order, multiple reflections which may be of abnormal intensity. They occur in waves which travel by multihop ionospheric reflections and finally turn back toward their starting point by repeated reflections from a slightly curved or sloping portion of an ionized layer.

ZINC.

Bluish-white, metallic element used in its pure form in dry cells, widely used in galvanizing of iron, and used in alloys such as brass.

ZIP FUELS.

High-energy, missile or rocket fuel.

ZODIACAL BAND.

Faintly luminous band of light appearing on the celestial sphere, connecting the zodiacal light with the Gegenschein. Caused by an extension of the solar corona out and beyond the earth. Could indicate presence of interplanetary matter in space which might be a hazard to space vehicles moving in the plane of the ecliptic.

ZODIACAN LIGHT.

Wings of hazy light extending on either side of the sun, approximately in the plane of the ecliptic. Visible after sunset or before sunrise. Believed to be part of the outer atmosphere of the sun.

ZONE BLANKING.

Method of turning off the cathode-ray tube during part of the sweep of the antenna.

ZONE MARKER.

Marker located at radio range stations to indicate position above such stations.

ZONE OF INTERIOR.

(Reference: ZI (ZONE OF INTERIOR.)

ZONE OF SILENCE.

Area between the point where the ground wave becomes too weak to be detected and the point where the sky wave first returns to earth. Normal radio signals cannot be heard in this area.

ZONE PLATE ANTENNA.

Rapid-scanning antenna, in which the reflector consists of arcs of confocal parabolas with focal lengths, which differ by $\tau/2$ and which lie close to a circle centered at the focus. Where 2 is the wave length.

ZONE, TIME.

Description and designation letters assigned to time zones are as follows:

Zone Boundaries	Description	Designation Letters
7-1/2W to 7-1/2E.....	0	Z
7-1/2E to 22-1/2E.....	-1	A
22-1/2E to 37-1/2E.....	-2	B
37-1/2E to 52-1/2E.....	-3	C
52-1/2E to 67-1/2E.....	-4	D
67-1/2E to 82-1/2E.....	-5	E
82-1/2E to 97-1/2E.....	-6	F
97-1/2E to 112-1/2E.....	7	G
112-1/2E to 127-1/2E.....	-8	H
127-1/2E to 142-1/2E.....	-9	I
142-1/2E to 157-1/2E.....	-10	K
157-1/2E to 172-1/2E.....	-11	L
172-1/2E to 180.....	-12	M
7-1/2W to 22-1/2W.....	+1	N

22-1/2W to 37-1/2W.....	+2	P
52-1/2W to 67-1/2W.....	+4	Q
67-1/2W to 82-1/2W.....	+5	R
82-1/2W to 97-1/2W.....	+6	S
97-1/2W to 112-1/2W.....	+7	T
112-1/2W to 127-1/2W.....	+8	U
127-1/2W to 142-1/2W.....	+9	V
142-1/2W to 157-1/2W.....	+10	W
157-1/2W to 172-1/2W.....	+11	X
172-1/2W to 180.....	+12	Y

Note. 1. The exact zone boundaries sometimes deviate slightly to accommodate national boundaries, etc. 2. Letter N is also used to designate zone -13; this is to provide for a ship in zone -12 keeping daylight saving time. 3. GMT is indicated by the suffix Z. 4. For time midway between zones, both letters are used.

ZONE-POSITION INDICATOR.

Auxiliary radar set for indicating the general position of an object to another radar set with a narrower field.

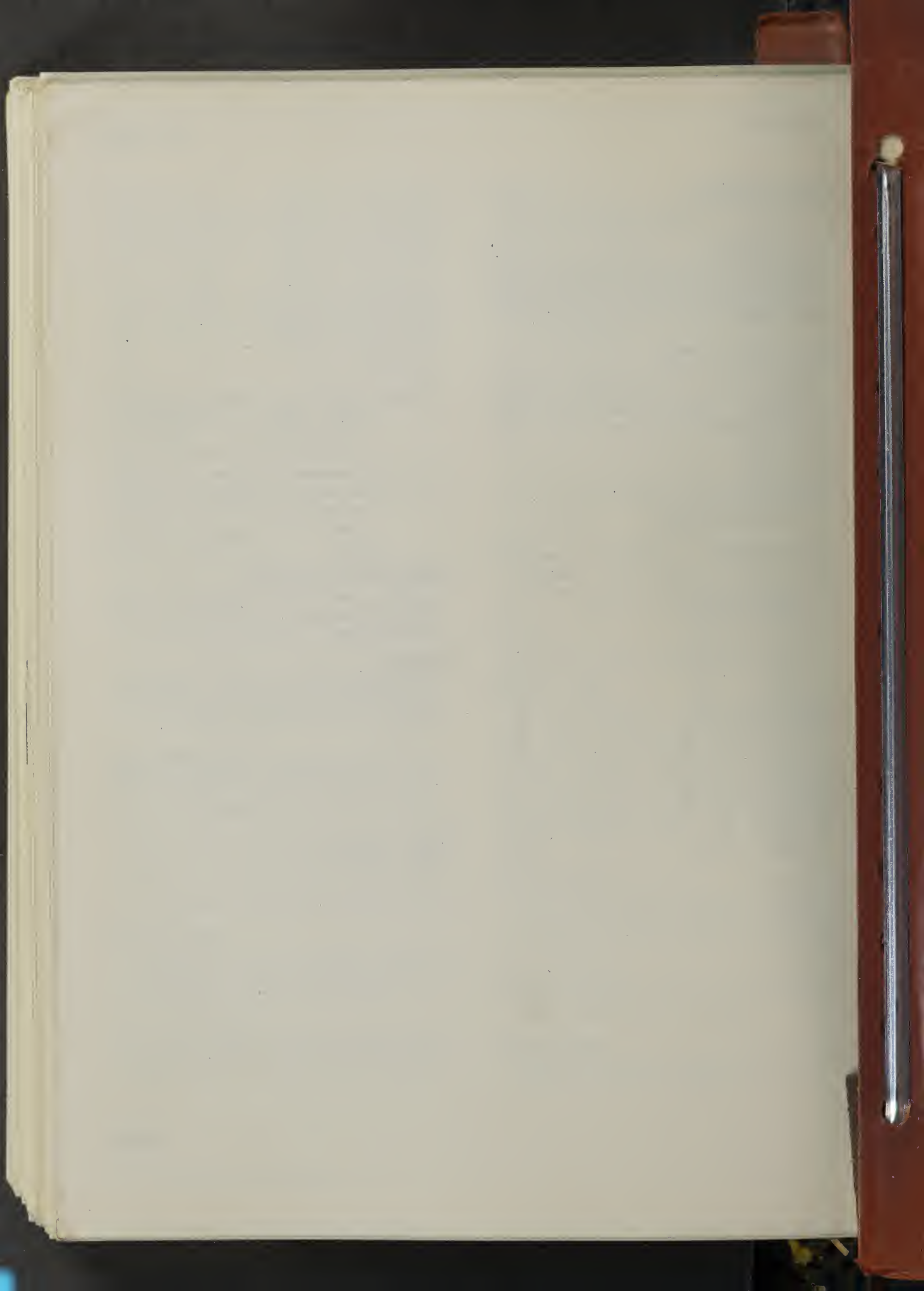
ZONING.

1. System for selecting the type of subscribers' instruments based on the distance from the central office at which they will be used.

2. Zoning of a lens or reflector is the displacement of various portions of the lens or surface of the reflector so that the resulting phase front in the near field remains unchanged.

ZVA.

Tape multiplication.



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